

The United States MILLER

AND THE MILLING ENGINEER.

Fifteenth Year.—No. 10.

MILWAUKEE, OCTOBER, 1890.

Subscription Price, \$1.00 Per Year.

"ENTER OUR ORDER"

RICHMOND

Grain Cleaning Machinery

AND

BRAN DUSTERS.

Extract from a Letter Recently Received.

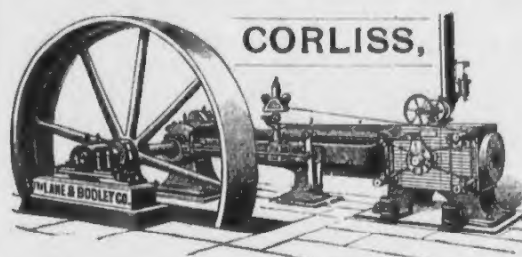
ENTER our order for earliest possible shipment, two more No. 7 Empire Horizontal Dusters. Now we have delayed ordering these Machines, until we could test the first one, and we are at very large loss daily by reason of not having the machines in.

We think it only fair to you, to say that at the time of ordering the first machine, we also ordered one from the..... The two machines have been in operation now side by side, and your machine so far eclipses theirs in workmanship and operation, that you have secured our order.

RICHMOND MANUFACTURING CO.

LOCKPORT, N. Y., U. S. A.

THE LANE & BODLEY CO.,



CORLISS,

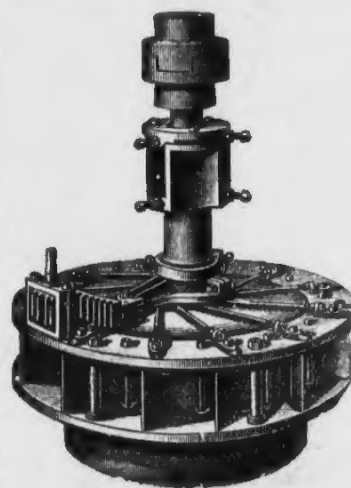
MANUFACTURERS OF
AUTOMATIC CUT-OFF

ENGINES

From Heavy Patterns and of Unexcelled Workmanship.

Steel Boilers, Feed Water Heaters, Shafting, Pulleys and Gearing.

THE LANE & BODLEY CO., cor. John & Water Sts., CINCINNATI, O.



Leffel Water Wheel

Made by JAMES LEFFEL & CO.

The "OLD RELIABLE" with Important Improvements, making it the

Most Perfect Turbine now in Use.

Comprising the LARGEST and the SMALLEST Wheels, under both the HIGHEST and LOWEST Head in this country. Our New Illustrated Book sent free to those owning water power.

Write us for NEW PRICES before buying elsewhere. New shops and New Machinery are provided for making this Wheel. Address,

JAMES LEFFEL & CO.,

Springfield, Ohio, or 110 Liberty St., New York.

THE
"WESTERN"
MILL SHELLER.

The most Compact, Durable, Best Sheller and Best Cleaner.

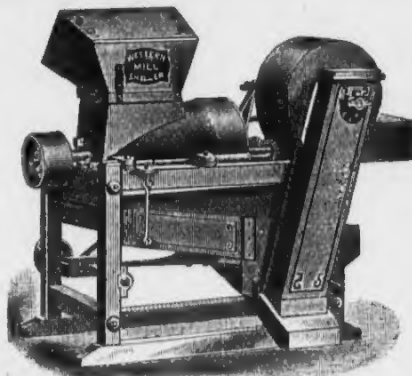
Takes up but little room, runs at low rate of speed, requires no attention. It is in every respect the

Best Sheller ever offered to the Public.

Please mention this paper. Write for full particulars to

UNION IRON WORKS, - DECATUR, ILL.

Mfrs. of "Western" Shellers, Cleaners, Separators, and all kinds of Elevator Machinery.



CAWKER'S

American Flour Mill & Grain Elevator Directory

FOR 1890-1891

It contains: 1. A list of Flour Mills in each State, Territory and Province, with names of owners, P. O. and county; in thousands of instances giving their capacity in barrels per day, kind of power used, etc., also indicating such firms as are supposed to be worth \$10,000 and upwards. Total number of mills given, 17,145.

2. A list of miscellaneous mills, such as Corn, Oatmeal, etc.

3. A list of Millwrights.

4. A list of Grain Elevator Owners and Grain Dealers.

5. A list of well-rated Flour Brokers, Merchants and BAKERS in all parts of the United States and Canada, which has been compiled with extraordinary care, capital and credit being considered in the compilation.

6. A list of Foreign flour and grain importers, secured by our own special correspondents and believed to be thoroughly reliable. In short, it is a complete KEY for reaching the Flour and Grain Trade, enabling ANY department of the trade to reach ANY other desired.

The price is invariably Ten Dollars per copy, on receipt of which it will be sent, post paid, to any part of the world. The complete work only is sold. We do not supply lists for single states. These Directories have been issued every two years since 1878, and have been declared indispensable by the prominent mill-furnishers, flour brokers, millers, etc., of this country and Europe. Address,

E. HARRISON CAWKER, No. 124 Grand Avenue, - MILWAUKEE, WIS.

"RUNS LIKE A CLOCK"

WATERTOWN, Wis., July 23d, 1890.

THE EDWARD P. ALLIS COMPANY,

MILWAUKEE, Wis.:

GENTLEMEN—It gives us pleasure to say that our Globe Mill, rebuilt by you and completed and running since June 1st, is giving us splendid satisfaction in every respect. The machinery is well located, and runs like a clock, smooth and easy. The quantity of wheat per bbl. of flour has been considerably lowered, the quality of flour greatly improved, and the mill is doing everything you guaranteed. We hereby acknowledge our acceptance, and shall be pleased at any time to have you refer other parties to us for further particulars regarding the mill in general or any of the machinery.

We remain, yours truly,

THE GLOBE MILLING CO.,

Capacity, 450 Barrels.

G. MAY, Secretary.

The above mentioned mill is fully equipped with Gray's Noiseless Belt Roller Mills, Gray's Improved Centrifugal Reels, Gray's Patent Flour Dressers, Reliance Sieve Scalpers and Reliance Purifiers, arranged upon our latest improved system, with the **BEALL CORRUGATION** on break rolls. The results speak for themselves.

If in want of anything in our line, write for prices.

THE EDW. P. ALLIS COMPANY

* Mill Builders and Mill Furnishers, *

RELIANCE WORKS,

MILWAUKEE, WIS.

The United States MILLER

AND THE MILLING ENGINEER.

Fifteenth Year.—No. 10.

MILWAUKEE, OCTOBER, 1890.

Subscription Price, \$1.00 Per Year.

A COMPOUND VERTICAL ENGINE.

THE engine herewith illustrated is a compound condensing Reynolds' Corliss, built by the Edw. P. Allis Company of Milwaukee, Wis., for the Imperial Mill Co., Duluth, Minn., and is used for driving their three-thousand-barrel Mill at that point. Its design shows the adaptability of the Corliss type of engines to the varying demands and conditions of location and service required. Where floor space is limited the vertical engine meets with much favor, and it will be seen that without adding to the floor space required the advantages of compounding may be had with the vertical as well as with the horizontal engines.

As will be seen from the cut, the engine rests upon a massive cast iron bed plate. On this bed plate are erected two heavy cast iron A frames which are strongly braced and tied together, and at the top support the low pressure cylinder, which in turn supports the high pressure cylinder. Galleries and a spiral iron staircase afford convenient access to all parts of the machine. The high pressure cylinder is twenty-six inches in diameter, and the low pressure fifty inches diameter, by forty-eight inches stroke. The receiver is located back of the cylinders so that but a small part of it is shown in the cut. Any desired form of condenser can be used with this machine, and the air pump may be driven from the cross-head, by belt from the main shaft of the engine, or an independent steam power condenser may be used. Taken as a whole the engine is very compactly and strongly built, and it is adapted to use in flouring mills, rolling mills, electric light and power plants, and for any purpose where economical power in small space is required.

The following figures are from a test trial of one of the Reynolds' Corliss engines of this design, fitted with an ordinary jet condenser, the air pump being driven by direct connection. They show that the economy is fully equal to horizontal engines. In this case the cylinders were 19 and 38 inches diameter by 48 inches stroke, both cylinders being steam jacketed. Steam was furnished by three boilers 54 inches diameter, by 16 feet long.

REPORT OF TEST.

Duration of trial, hours,	24
Steam pressure by gauge, pounds,	102
Vacuum by gauge, inches,	28
Piston speed per minute, feet,	414.78
Total coal fired to furnace, pounds,	14,750
Total water fed to boilers, pounds,	109,890
Temperature feed water entering boilers, Fahr.	120.62
Water evaporated per lb. coal, pounds,	7.45
Indicated horse power,	225.47
Steam per horse-power per hour, pounds,	14.06
Coal per horse-power per hour, pounds,	1.89

No allowances were made for entrained water in the steam or noncombustible in the coal, the latter amounting to 12.27 per cent of the total quantity used.

SPRINKLERS IN FLOUR MILLS.

A CORRESPONDENT of the *Western Mutual Underwriter* says: "Sprinklers in many places are not only desirable but necessary, to reduce the fire hazard, and are entitled to a reasonable reduction; but when placed in a flouring mill, and the rate is divided by two, merely for the sprinkler equipment, whatever companies carry the

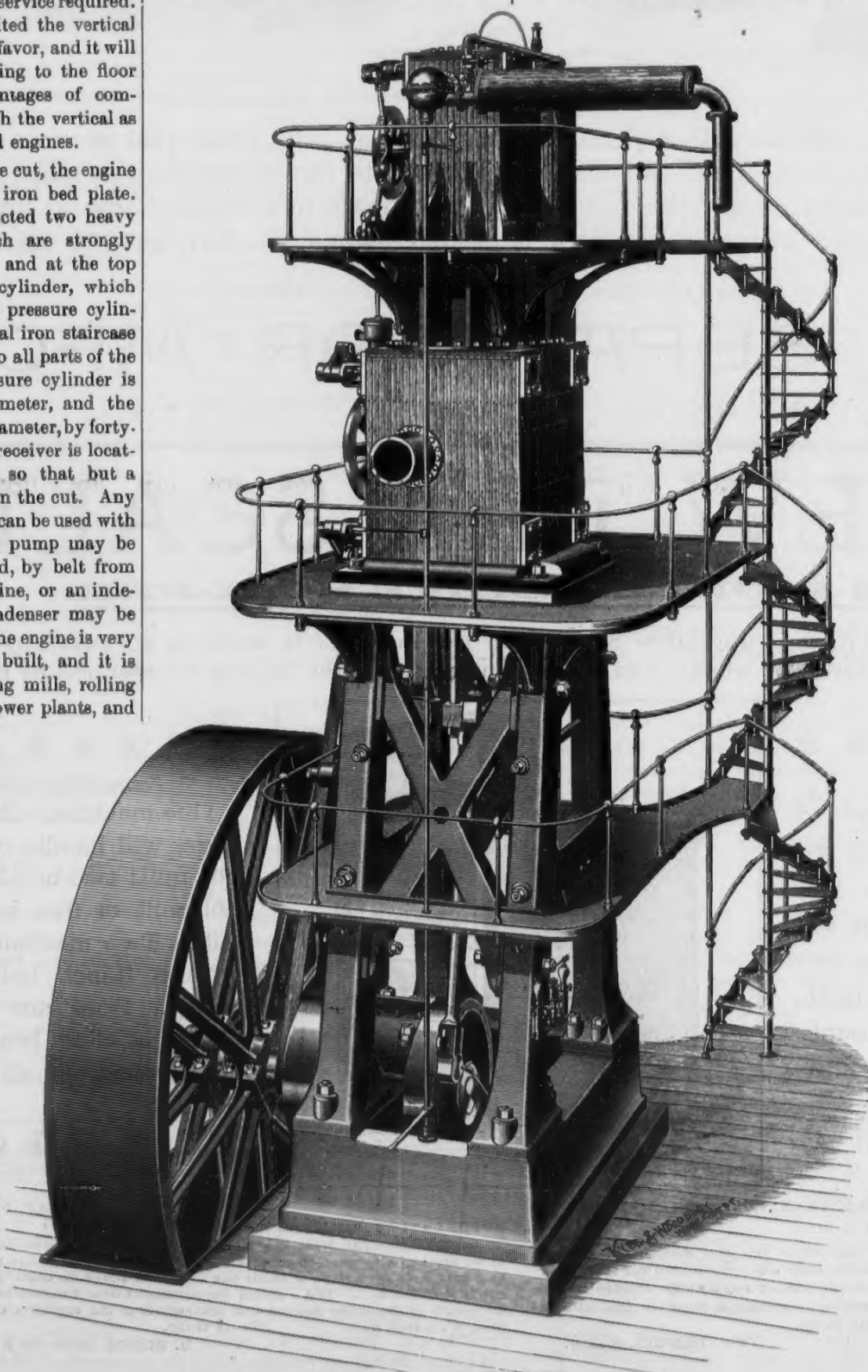
Every bolting chest, purifier, elevator, conveyor, wooden spout or belt which comes in contact with a flow of water, is irretrievably ruined, and should the fire get fairly started, the chances for sprinklers to do efficient work are doubtful; the interior of a flour mill being composed almost wholly of the driest and most inflammable material, that burns with such force and rapidity that the chances for the sprinkler

York companies at 1½ per cent. They may never burn. They might never burn if they were not equipped; but I venture the prediction that should a fire in either of them get fairly started their destruction will be complete. I do not wish to be understood in this connection as depreciating the equipment of flour mills with automatic sprinklers. The point I wish to make, however, is that the percentage of reduction for a flour mill equipped with automatic sprinklers should be much less than for a wood worker, cotton mill, machine shop, or in fact almost any other special hazard; and particularly a flouring mill equipped with automatic sprinklers having a large dust room inside the building is entitled to much less reduction than a mill equipped with automatic dust collectors, for the reason that the dust room hazard is not only great of itself, but the chances are that a fire taking in the dust room would undoubtedly destroy the sprinkler equipment by explosion. I therefore, conclude that a flouring mill thoroughly equipped with automatic sprinklers with two sources of water supply and automatic dust collectors should not be entitled to exceed 25 per cent reduction in the rate. Any deficiency in these matters should decrease the amount of reduction accordingly."

NOTABLE APPLICATION OF WATER POWER.

Some interesting features are noted in the power equipment of the Treadwell mill, Alaska—the largest quartz mill in the world, consisting of 240 stamps, 96 concentrators, 12 ore crushers, etc., and requiring about 500 horse-power. All this machinery, covering several acres of ground, is run by a single wheel 7 feet in diameter, operating under a head of 490 feet, making 235 revolutions, and using 630 cubic feet of water per minute, this being discharged through a nozzle 3-31 inches in diameter; with a 4-inch nozzle this wheel will work up to 735 horse-power. Regulation is afforded by the use of a deflecting nozzle operated by a hydraulic governor; the nozzle is about four feet long with a ball joint at the butt end, and to the discharge end is attached by lever connections an automatic hydraulic regulator, which varies the amount of water applied to the wheel as may be needed to adapt it to varying loads—a device which affords a peculiarly simple, sensitive and satisfactory regulation. With such an arrangement, and in such a location, the advantage of water power is conspicuous. Thus the wheel above mentioned weighs but 800 pounds, and the entire equipment, embracing shafts, boxes, driving pulley, etc., only about 4,000 pounds; on the other hand a steam machinery plant, to give the maximum capacity of such a wheel, would not weigh less than 200 tons, and the expense of running such a plant would be almost immeasurably greater.—*Mining and Scientific Press.*

LARGE stocks of wheat are still held in several of the country districts in Australia, but owing to the inferior condition of a considerable quantity of this season's wheat, the actual available surplus fit for export is difficult to arrive.



VERTICAL COMPOUND REYNOLDS' CORLISS ENGINE.

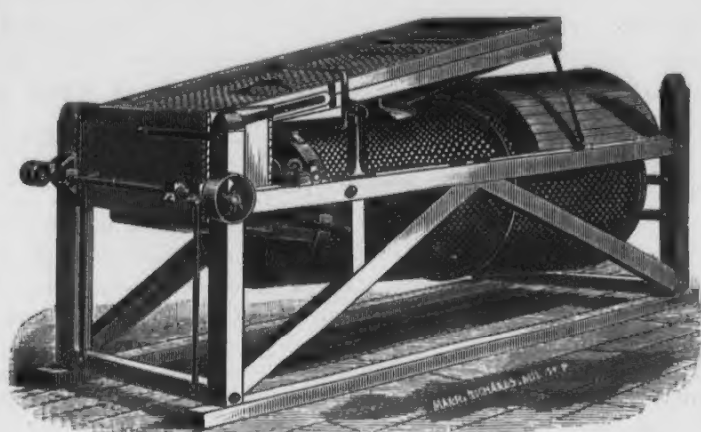
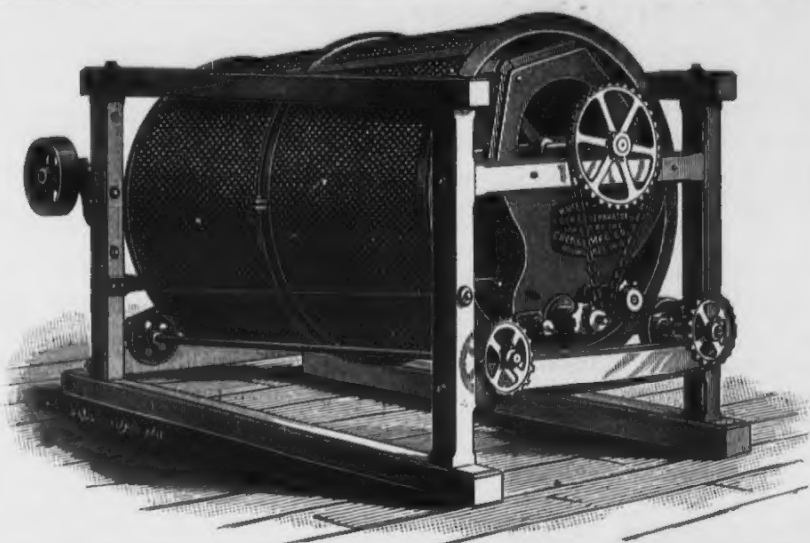
line on that basis will figure up a profit on the wrong side of the ledger. There is hardly a manufacturing institution extant so susceptible to water damage as a flouring mill; and, while the sprinklers may be effective in putting out the fire, the chances are that a large water damage will result of sufficient importance to use up a large portion of the face of the policy,

equipment are about even, whether they will put out the fire or be destroyed by the fire. I have in mind at the present writing two frame water-power flour mills in the State of New York, which are equipped with automatic sprinklers. One of these mills I do not consider insurable with or without the sprinkler equipment, and yet these mills are written in New

The Kurth Cockle Separator

THE PIONEER COCKLE SEPARATOR

And the machine that is running and giving satisfaction in thousands of mills in this country. Years of work prove its usefulness and durability.



We are now prepared to furnish these Separators in three styles, with either reel or sieve graders, and also with or without oat separator attachments. We are also prepared to furnish machines of small capacity, suitable for small mills, without any grader, simply the cylinder and catchboard in a simple frame, at low prices

These machines are supplied with steel cylinders, if desired. When you buy, get the best. It is cheapest in the long run.

FOR CATALOGUES, PRICES, ETC., ADDRESS

COCKLE • SEPARATOR • MFG. • CO.
MILWAUKEE, - - WISCONSIN.

THE NEW ERA SCALPER

THE PIONEER SIEVE SCALPER.

Does better work, and more of it, than any other Scalper on the market. Is working successfully in all sections of the country, on all grades of wheat, and is sent under guarantee to give satisfaction or no sale.



Write for circular giving list of millers using this machine, and go and see its work. If you do, you will see that it will be to your advantage to use it. The above circular also contains numerous testimonials, of which we give a couple of samples.



One machine, with sieve 40 inches wide, will handle one break in 500 bbl. mill; two breaks in 200 to 250 bbl. mill, or four breaks in 100 bbl. mill. Two machines can be driven with a 3-inch belt over a 5-inch pulley. Does not scour the bran, giving a clear break flour and an improvement in all grades.



SHEBOYGAN, WIS., April 26th, 1890.
SUPERLATIVE PURIFIER MFG. CO., Milwaukee, Wis.:
Gentlemen—The two New Era Scalpers purchased of you two months since have been running continuously ever since. They have done all you claimed for them, and we would not now be without them. They have made a most remarkable change in the appearance of all stocks in the mill. We heartily recommend them to the milling fraternity.
Very truly yours,
WM. ELWELL & SON.

MIDWAY, PA., August 5th, 1890.
SUPERLATIVE PURIFIER MFG. CO., Milwaukee, Wis.:
Gentlemen—The New Era Scalper bought of you has now been running for about three weeks, with perfect success. As short a time as it has been in operation, I would say that I would not be without one for three times its cost. It has improved the whole product of the mill. It's a grand improvement over the reel scalper; takes only about one-tenth of the horse power, and am satisfied the machine could be run successfully with a 1 1/4-inch belt.
Yours truly,
D. BLACK, miller for ROBBINS & SANFORD

FOR CATALOGUES, CIRCULARS, ETC., ADDRESS

SUPERLATIVE PURIFIER MFG. CO.
MILWAUKEE, - - WISCONSIN.

ALSO MANUFACTURERS OF

The Superlative Purifier and Superlative Bran Duster.

DONALDSON.

Milwaukee, Oct. 15, 1890.

(From Our Regular Correspondent.)

OUR ST. LOUIS LETTER.

THE last week has been one of carnival to St. Louis, and of the seven days, but two have been really business days. This in part accounts for the poor showing of the mills, which managed to show but a little over 50,000 barrels for the week's output. Sunday, Oct. 5th, was German day and several miles of procession wound in and out through the greater part of the city. Monday was Colorado day, and a royal reception was given to the big delegation which had visited the city. On Tuesday his mysterious majesty, the Veiled Prophet, with his retinue and attendant "floats," made his annual appearance in the city. Thursday was "Big Thursday" of Fair Week and the whole city took a holiday to visit the fair. And lastly, on Saturday, the President and party arrived and spent the day with us. Of course, a reception was held on 'change and all thoughts of business were banished for that day from the minds of even the most energetic. The fair this week was the main point of interest for the millers as well as our "country cousins," and no small attention was paid to the flour display. In the awarding of premiums, the Sessinghaus Milling Co. was the fortunate one and carried off first premium, both for "patent" and "clear" flours. In the special premiums for the country mills, the Paris Milling Co., of Paris, Mo., carried off first for "patent" while S. H. Merten & Co., of St. Charles, Mo., were equally fortunate in "straight." Speaking of exhibits, reminds me of the splendid display of Colorado at the St. Louis Exposition. Manager Gaiennie was successful in getting the State display to come here this year, and I much doubt the ability of any sister State, even Missouri, in making a finer or more extensive one. A no small part of the exhibit is the cereal department, and to judge from the wheat and corn shown, Colorado must be very successful this year in her crops, all reports to the contrary notwithstanding. Owing to the many attractions, St. Louis has been over-run with delegations from all the adjoining States, and Arkansas, Illinois, Iowa, Kansas and even Ohio have been strongly represented, and of these delegations not a little were composed of millers, who took this occasion for a holiday, and the Merchants Exchange floor was crowded with many strange faces.

Oh! what a discovery has been made in milling circles here, of the business methods of some of our milling friends in Texas and Kansas. The Kauffmann Milling Co. have been and are doing a very large Texas business. When bids were solicited for supplying the State Insane Asylum at Austin, Texas, with flour from August to January, the Kauffmann Milling Co. gave in a bid, but were much under-bid by the firm of Nelson Davis & Co., of Austin. This firm's bid was \$3.75 for a grade patent. This company has no mill of its own, put purchased the necessary amount from a relative of Mr. Davis, Isaac Heidenheimer, of Galveston. Mr. Heidenheimer is part owner in a large mill in Kansas, and it was from this mill that the flour was shipped for Austin, Texas. Early in this month two car loads of flour were received at Austin, for the Insane Asylum, and without delay the flour was sent direct from the depot to the Asylum. In delivering it the teamster noticed that the barrels were very shaky and notified Dr. Dorset, Superintendent of the Asylum, of the fact. On examination it was found that the barrels were short of weight twenty-six (26) lbs. each, making the weight only 170 lbs. per bbl. This made a little gain of 75 cents per bbl. to the contractors. As soon as this became known, the Kauffmann Milling Co's agent in Texas, notified his com-

pany of the fact, and on application, the firm obtained Dr. Dorset's certificate on the matter. The Kauffmann Milling Co. are not saying much, but the milling world will soon hear from them on the matter. I have heard of cases before where short weight was made the basis for profit on low bid contracts, but never to the extent of twenty-six lbs. on the barrel.

Toward the latter part of September the regular quarterly meeting of the North Missouri Millers' Association was held in the parlors of the Laclede Hotel. The attendance was fair and represented a big bit of territory. President Pollock, of Mexico, presided, while J. W. Wayland was present to fill the office of Secretary. Secretary Barnum, of the Millers' National Insurance Co., addressed the Association on the subject of mutual insurance, and the matter was discussed at length.

At the meeting of the Board of Trade representatives at Chicago, to form "The National Transportation Association," Mr. Henry Craft was the St. Louis delegation. As a forced union, to confer with the railroads in respect to the uniform bill of lading, it should possess considerable strength, and may prove the means towards a favorable ending. And in speaking of the bill of lading, the following extract may be of interest to shippers of cotton as well as others:

"Judge Withrow this morning gave judgment to H. T. Bennett against the Missouri Pacific Railroad for a total sum of \$1,845 55. This was in a suit instituted to recover the value of two lots of cotton, consisting of 20 and 19 bales respectively, that were destroyed by fire near Galveston, Tex., Nov. 20, 1887, and that had been transported over the defendant's railroad from Hillsboro, Texas. The cotton was shipped under bills of lading that guaranteed the rates of freight from Hillsboro, Texas, to Greenville and Norwich, Conn., and that absolved the defendant railway company from loss from the destruction of the same by fire. The plaintiff contended that as the law of Texas prohibited a common carrier from limiting its common law liability, the fire clause in the bill of lading was not operative. The defendant railroad held that the bills of lading were interstate contracts, the rates of freight being guaranteed from Hillsboro to Greenville and Norwich, Conn., and the cotton being consigned to Bennett at the latter places. Judge Withrow found that the bills of lading were Texas contracts and that the exemption clause set up by the defendant being void under the laws of the State, the defendant is liable as at common law. Hence the judgment for plaintiff."

WHEAT.

Wheat is very quiet here and there is very little being done. Of course, there is a slight mill demand while speculation manages to make a market, but that is all. Receipts for the last three weeks were 564,916 bushels, of which amount 189,888 bushels are for last week. Shipments aggregate 113,688 bushels, with 50,309 to last week's credit. Quotations for the week on wheat are:

	No. 4	No. 3 Red	No. 2 Red
Monday,	90@90½	96	99@99½
Tuesday,	91 East Side,	96½	99½@99½
Wednesday,	90@90½	96@97½	99½@1.00
Thursday,			
Friday,		96½	99½@99½

FLOUR.

Flour was dead this week and nothing was done in trading. With a little over 50,000 bbls. output, it was evident that the millers were thoroughly enjoying Fair week to the utter destruction of the flour market. Even the Southern trade was influenced and no business of importance was done in that line. Receipts for the week were light, with only 16,728 barrels, making a total for the last three weeks, of 67,979 barrels. Shipments were 49,095 barrels for the week, with an aggre-

gate of 141,638 barrels for the past three week.

The output of the mills for the past three weeks is as follows:

Victoria,	5,200	5,100	1,800
Meramec,	2,000	2,000	1,000
Regina,	3,600	3,750	3,000
Camp Spring,	3,900	1,800	3,400
Kehler Milling Co.,	5,200	5,200	4,000
Crown,	5,500	2,500
St. George,
United States,
Yaeger,	5,600	5,400	4,000
Saxony,	2,800	3,100
Plant,	8,500	8,500	5,500
Alton City,	3,900	4,000	3,600
Jefferson,	3,600	3,600	3,600
Eagle Steam,	2,850	2,500	5,000
Carondelet,	750	750	600
Planet,	6,000	5,400	7,000
Hezel,	3,600	1,800	1,500
President,	7,200	4,500	4,200
Goddard,	2,600	2,500
Total,	71,800	62,400	50,700

Quotations on flour are: XXX \$3.00@ \$3.10; family, \$3.25@3.35; choice, \$3.50 @3.75; fancy, \$4.25@4.35; extra fancy, \$4.60@4.75; patent, \$5.00@5.10.

WALTER HOWARD BAIN.

St. Louis, Oct. 14, 1890.

OAT FLOUR.

By ALBERT LARBALETRIER in *The British and Foreign Confectioner* (London).



If all the cereals cultivated in the world, oats are the least used for human food, because they are not really a cereal for panification, or rather because the bread they furnish is heavy, dark in color, compact and bitter.

Is this fact in itself sufficient to exclude them from human alimentation? We do not think so, and it is because we are of opinion that nothing which concerns so serious a problem as the supply of food for man should be neglected, however slight the contingent obtained. Moreover, the reason stated above for excluding oats from alimentation is not sufficient, for maize and rice are in an identical case, and although they are not suited for panification, no one thinks of disputing their utility.

At the present day wheat is almost exclusively used for panification, bread being the basis of our nutriment. Barley and rye flours are disappearing every day from French bakeries, much more so is oat flour. Nevertheless, our ancestors in Gaul and Germany consumed oats in the form of pap, which constituted even the chief part of their food.

Every one knows that oats give strength and vigor to horses, and to a certain extent have the same effect on men.

Oat flour gives a bad quality of bread. This is due to its chemical composition, which gives too slight an amount of gluten. This last varying in the proportion of 3 to 4.8 per cent.; and again, the substance thus designated in the analytical reports is more like albumen than gluten properly so called, which in wheat is found in the proportion of 10 to 18 per cent. This in no wise prevents a mixture of oat, wheaten and rye flour from giving in Brittany a very savory bread of the best quality.

M. Grandeau having analyzed 174 specimens of oats gave the following average composition: Water, 12.97; azotined substances, 9.59; fatty substances, 5.16; starch and sugary substances, 59.18; cellulose matter, 9.82; mineral matter, 3.28.

One sees, from a chemical point of view, oats differ from wheat in the small proportion of azotined substances, and their richness in fatty and mineral matters.

There is another substance contained in oats, called *avenine*. This substance, which is a kind of alkaloid, is contained in the pericarp, it is this which gives the piquant property to oats.

By grinding of oats one obtains 68 to 72 per cent. meal, the rest being bran or small bristles or awns of great tenacity representing about 2 to 3 hundredths of the total weight.

As for oat flour, it is difficult to obtain in effect, owing to the large proportion of fatty substances contained by this cereal; if it is crushed directly under mill-stones these last are clogged and stop and scarcely

give 20 to 25 per cent. of a coarse pulpy flour. In Brittany oat flour is prepared by placing it in bread ovens, and after a few hours it is passed under the stones then through the winnowing machine.

In Ireland oatmeal is made by passing steam into the double bottom of a cauldron, where the oats are placed; the operation is concluded when the mass gives off abundant steam on the surface. The oats thus prepared are placed in an oven with a low temperature, remaining there 24 hours; a beginning of fermentation takes place which renders a portion of the starch soluble; then it is passed under stones suitably distanced, and finally in a winnowing machine, which separates the grains from the glume and awns.

Oat flour is undoubtedly a healthy food, pleasant and nutritious, which might find a place in current consumption if bakers would try and blend it with other flours.

A GERMAN OIL MILL.

A BERLIN contemporary, *Der Müller*, gives an interesting account of an oil mill of moderate capacity but modern construction (it dates from 1884), which is to be found in the Prussian province of Brandenburg. This mill is capable of crushing 1,500 kilos. (roughly, 1½ ton) of linseed in a day of 12 hours, and is worked by a Henschel-Jonval turbine, which, making 45 revolutions a minute, transmits 15-horse power. According to the writer of the article in question, the production of linseed oil demands almost double the motive power required by colza oil. The following is a mean calculation of the respective oil yielding capacity of linseed, colza and rape:—100 kilos. (220.46 lbs.) of raw linseed yield 22 to 26 kilos. of oil; 100 kilos. of winter colza yield 24 to 28 kilos. of oil; 100 kilos. of winter rape yield 30 to 32 kilos. of oil. The specific gravity of linseed oil is 0.93, while that of rapeseed oil is 0.91.

The raw seed reaches the warehouse by means of elevators, and while one elevator serves to carry linseed to the first floor, a second and distinct elevator is allotted to the colza and rapeseed, which are stored on the second floor. It is remarked by the writer of this article that in an oil mill ample floor space in the warehouse is absolutely essential because oleaginous seeds will not bear much heaping. In this particular mill a layer of seed on the warehouse floor is not, as a rule, allowed to exceed 85 mm. (3½ in.). With very dry material, a height of 300 mm. (11½ in.) is permissible, and in the winter time the seed is heaped as high as 600 mm. (23½ in.). When heaped too high seed has a tendency to heat and sweat, the result of which is that the grains stick together, and their yield of oil is not only diminished in quantity but deteriorated in quality. A seed crusher has been placed on the first floor, but it is only used for the preliminary treatment of colza and rapeseed. The seeds are brought down from the second floor by means of a wooden spouting, which delivers them into the hopper of this crusher; after obtaining a preliminary cleaning by passing over two sieves, they receive their first crushing between a pair of smooth chilled iron rolls, which rotate one against the other. One of these rolls, which is gear-driven, has a diameter of 280 mm. (11 in.) while its companion is driven directly from the shaft, and has a diameter of 300 mm. (11½ in.) by a length of 600 mm. (23½ in.). Both rollers make 68 revolutions in the minute. Another crusher is to be found on the basement, but this works only on linseed, which is fed to it as required by a spout. On leaving the spout the seed is received in a wooden hopper, passing directly thence to a wire sieve 3.8 mm. (nearly ¼ in.) in width, which removes the straw and spikes. The seed and smaller particles drop through these meshes and fall on to a second wire sieve with meshes only 1 mm. (about ¼ in.) in width. This sieve has the property of sifting out sand and shrunken grains

while retaining the good seed, which passes over its surface and into a conduit by which it is conveyed to two rolls to receive a preliminary breaking, after which operation it is passed into the "first break bin." It is to be noted that the sieves are both driven by an eccentric shaft making 320 revolutions to the minute. With regard to the rolls, the directly driven roller has a diameter of 300 mm. (about 11½ in.), and a length of 700 mm. (about 27½ in.), is fitted in fixed bearings, and runs at a speed of 65, while the second roll, which is driven by the first by gears at a rate of 50 to a minute, has the same dimensions. The first roll is pressed by a bell crank against the second, which is weighted with 1,500 kilos. (about a ton and a half). A machine of this description can do enough work to keep the two presses used in this mill fully occupied.

The material having received its preliminary crushing is taken to a pair of vertical millstones, by which it is ground to a fine flour (*mehl*). There are in this mill two pairs of such millstones, the ordinary feed of each pair varying from 50 to 100 kilos. (120 to 240 lbs.) of seed. The runners are made of hard material. Each stone weighs some 4,800 kilos. (about 4½ tons). The runners make 10 revolutions in the minute, and grind up 50 kilos. of seed in an hour. The setting irons just touch the ground and serve to simultaneously feed and scrape the runners.

A pair of operatives, whose common duty it is to look after one mixing machine (*Pielmaschine*), one heater and one hydraulic press, draw off the pulverized seed from underneath a pair of stones, and each takes a weight of 10 kilos., or 24 lbs. (forming a cake), to the mixing machine. This consists of a wrought iron spindle revolving in an iron casing at a speed of 75 to a minute, and furnished with 24 blades, which join the parent stem at oblique angles and serve to thoroughly mix the material. To each cake there is added before it is stirred half a litre (nearly a pint) of water. The operation of mixing is completed in some five minutes, when the iron casing is tipped to an angle of 180 degrees, which has the effect of reversing the position of the feed opening—that during the mixing stood at the head of the material—and of discharging the latter.

On being discharged from the mixer the crushed seed is received in a sort of trough suspended underneath, and is conveyed in this receptacle to the kettle, under which a fire of moderate degree is kept burning; 10 kilos. of material treated as described require, as an indispensable preliminary to the press, a torrefying process of 10 minutes duration.

An important feature in the kettle is its driving gear, which is capable of drawing up, and consists of a driving shaft which makes 15 revolutions, and of two spindles connected with it and driven by planet-wheels which make 45 revolutions in the minute. To empty the kiln the driving gear is pulled up, and the torrefied material is raised off the heating plate by a shovel and brought by means of a conduit to a table, where it is filled into moulds known as *Metzen*, and this is the last stage to the press.

The hydraulic presses in this mill are constructed on the patent (German Empire) of Messrs. Brix Brothers, of Kottbus. In these machines the press cylinder is worked by a couple of hydraulic pumps at a pressure of 200 atmospheres. (An atm. is equivalent to a pressure of 14·706 lbs. to the square inch.) The cylinder drives the press heads against one another with a pressure corresponding to 156,000 kilos., or about 374,400 lbs. The press is fitted with a pressure gauge indicating up to a pressure of 500 atmospheres, as well as with a safety valve blowing off at 200 atmospheres. The crushed seed is filled into the mould, which is made of wrought iron, and has a conical base pierced with holes; on this is laid a mat made of horsehair or felt. The seed is poured on this mat, and when the mould is full the seed is covered over,

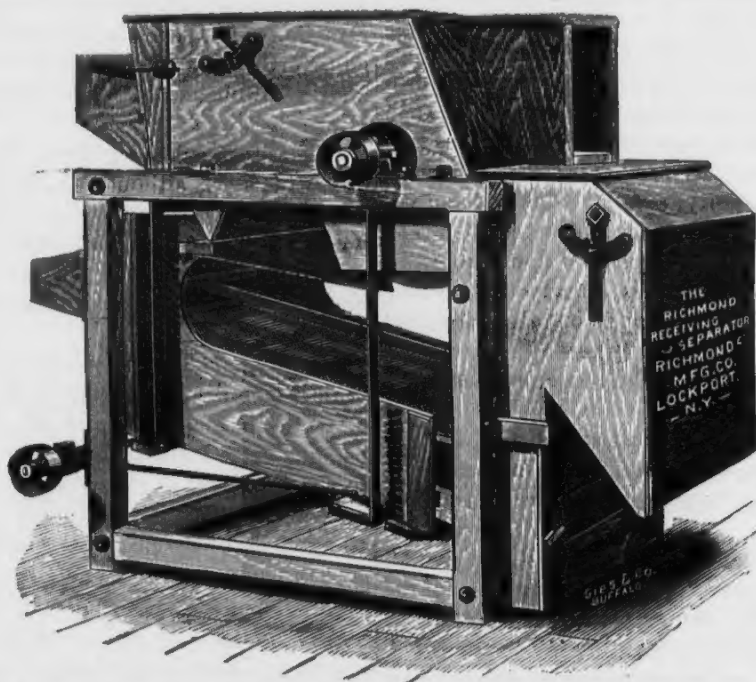
firstly by a second horsehair or felt mat, and secondly by a cover which is also pierced with holes. The seed is now ready for the press, which will accommodate two moulds at once. When the press has been properly charged the pumps are set to work until the requisite pressure is reached, when they are stopped. A three-way cock is then so manipulated that the water in the press cylinder is set free to flow back into the feed reservoir, while by the turn of a hand-wheel the press head is loosened and the cylinder simultaneously pushed back. After the head has been thrown further back a mould can be drawn out, emptied and refilled, whereupon the process of pressing can be recommenced and continued as described. During the second pressing the second cake will have time to be pressed quite dry. The oil wells through the pierced cover and base, and runs along the intermediate piece, as well as along the press heads (which, to facilitate this operation, are provided with longitudinal grooves), and collects in the oil tanks. The cakes made in this mill have a diameter of 375 mm. (about 14½ in.) and are about 50 mm. (nearly 2 in.) in thickness. Some of these cakes are sold as cakes, while others are crushed (as will be shown) into a kind of flour or meal.

The feed pumps work simultaneously up to a pressure of 200 atmospheres, but whenever the pressure in the case of either

is to let slip the ratchet, when the work of crushing will proceed as before. The stamps (each of which weighs about 50 kilos. or 120 lbs.) are made of oak, and their heads are tipped with wrought iron. The wooden cam-shaft runs at 22 to the minute. A pair of stamps can, it is said, reduce a cake into "linseed cake flour" in 15 minutes.

THE RICHMOND EMPIRE RECEIVING SEPARATOR, WITH DOUBLE SEPARATION.

THE operation of this machine is very simple, and is as follows, viz: The grain is first fed into a hopper, which is arranged with an automatic feed valve, which distributes the grain evenly, in a thin stream into the first separating spout, where it is met by a strong upward current of air, which removes chaff and light impurities, the dust passing into the fan, while the light chaff and other impurities are discharged into the screenings spout. The grain is then distributed evenly over the full width of the scalping sieve, which removes straws, headings, sticks, etc. The grain then passes from the scalping sieve to the large main sieve, which removes other impurities, that escaped through the scalping sieve. The grain then passes over a fine sieve, which removes sand and small seeds, and from thence it passes into the last separating spout, where it is



THE RICHMOND EMPIRE RECEIVING SEPARATOR, WITH DOUBLE SEPARATION.

pump exceeds 200 atmospheres, its suction valve automatically stops work. This stoppage is effected by means of a lever loaded with weights, which is raised by a piston that is itself connected with the pump casing. The action of this lever has the effect of filling the suction-valve with air so that it can no longer close at the stroke of the plunger, and drives back the water which has been sucked up, instead of driving it through the delivery-valve. The second pump now works by itself until the pressure of 200 atmospheres is in its case reached, when it is thrown out of work in the same way as the first pump. The delivery pipes are bored and made of steel; they have an outward diameter of 13 mm. (rather more than ½ in.) and a hollow diameter of 6 mm. (nearly ¼ in.). The mill is also furnished with nine pairs of stamps, which are used both to supplement the millstones and to break up the cakes. Should a single pair of stamps be for the moment superfluous, or should it be necessary to throw such a pair out of gear, in order to empty the cake-pan on which they are at work, the stamps have merely to be raised by the handle, and then by fitting a sort of ratchet into a notch cut in the stamp the latter can be effectually disconnected from the tappet, while the work of the other stamps will suffer no interruption. The cast-iron pan (holding the cake) is emptied from the top. As soon as the pan has been refilled all that need be done to bring the stamp back within the action of the cam

subjected to similar treatment as in the first separating spout. The last separating spout is arranged with an automatic feed valve similar to that upon the first separating spout, which prevents any air passing into the spout with the grain, so that a perfect separation is effected. The main sieve is arranged so that it can be easily changed for a finer or coarser one at any time, so as to clean different kinds of grain without difficulty. The separating spouts of this machine are the full width of the sieves, which gives it a perfect separation. The machine is built in a thoroughly workmanlike manner, and of selected material. It removes all dust and consequently can be placed in any part of the building. Further information concerning this machine can be obtained by addressing the Richmond Manufacturing Co., Lockport, N. Y.

(From Our Regular Correspondent.)

OUR BALTIMORE LETTER.

Importance of Keeping Grades Uniform Under All Conditions—Hints to Mill-Owners in regard to the Selection of a Proper Millers' Agent—The Baltimore Flour and Grain Market—A Careful Diagnosis of the Situation.

WHAT we have to say this month vitally concerns every miller in the land, and lest our remarks should be forgotten, would suggest that they be cut out and pasted conspicuously somewhere in the office for future reference.

The first point, then, which we desire to impress indelibly upon the minds of our readers, is that no miller is a good business man who will, for a single instant, permit the quality of his flour to fluctuate with the market, no matter what the provocation, or who will in the least under any circumstances, for any reason, pecuniary or otherwise, take the risk of skinning under the prescribed standards which he himself, of his own free volition has established, and for which he seeks recognition and by which he hopes ultimately to acquire a reputation.

It is poor policy, and suicidal in fact, to contract for one thing and deliver another; but alas! how many there are who do it and at the most inopportune times, too.

We have known mills to start out on a new crop under the most flattering auspices, with colors flying, standards high, shipments superb, and everything else, in fact, that was calculated to insure them a brilliant future, when suddenly, at the tail end of the season, they have allowed something to transpire, out of the regular order of things, which, in the twinkling of an eye, has revolutionized their prospects, destroyed confidence, counteracted the good name and impression made, and in a word, damaged them more by far than their previous records or profits could possibly repair. Such folly, stupidity and shortsightedness is almost an every day occurrence, but why it is so is beyond our comprehension.

We are not here for to-day or to-morrow merely, but for our lifetime, and the records that we are making in business now are for our weal or woe hereafter, and unless a man can see no further than the end of his nose, it becomes necessary to guard every action jealously and pave our way, not with good intentions, as some one has said the streets of heaven are paved with, but with such conduct and such living up to contracts as will win us the honor, respect and confidence of the trade and also the reward which inevitably follows such a contingency.

But on the other hand, how often do we meet cases like this:

A miller doing a large and prosperous business, being short of material, sees a cheap lot of wheat, and although it is not quite up to what he has been using, will chance squeezing it in, in the absence of anything better, for the sake of keeping his mill running, trade supplied and making a few extra dollars; never once taking into consideration, however, that by that very act he is jeopardizing the reputation of his brand which it has taken months and perhaps years to establish. Do you ask what we would do similarly situated? If so, our reply would be to shut down your mill a thousand times over, rather than be guilty of perpetrating a fraud on your customers, and if that be not feasible, then draw supplies from a distance, at any cost, rather than let your brands suffer, for "be sure that your sin will find you out" should you act differently, as many, very many who read these lines can undoubtedly bear witness.

There are those probably who will deny the practicability of our theory, or that any concern goes to such extremes and expense to maintain its standards, and yet, while we have the Galaxy Mill Co., of Minneapolis, the C. A. Gambrill M'fg Co., of Baltimore, and Homer Baldwin, of Youngstown, Ohio, to point to as conspicuous examples of the policy we advocate, we have no fears of being shaken in our position. These firms, and there are many others, doubtless, spare no expense to keep their grades at the top and perfectly uniform on all occasions, and when that cannot be accomplished with supplies at home, they either close their mills or else go into a far country for material, but under no circumstances do they ever trifle or experiment with any thing that is inferior to requirements, and the consequence is that they each have an enormous and ever increasing trade

for their flour, and also a reputation for the same that is simply phenomenal.

These concerns then, are the patterns which we would beg leave to submit for emulation.

They never, like many, make flour to barely skin through, but on the contrary, it is invariably their ambition to experiment on the maximum side and to improve standards as much as possible.

Like many, also, they never, never, know what it means to receive such complaints as these: poor cooperage, light weight, advertising matter concealed in flour, irregularity of quality, unsoundness, rejections, failure to make shipments as directed, and the thousand and one annoyances that constantly molest the less scrupulously and particularly inclined. We contend that it is just as easy to do business right as wrong, and honestly as dishonestly, and that it is far more profitable too, in the long run, as we have already seen.

If we do not take care of the present, the future will certainly not take care of us. We claim, therefore, that no mill can afford to experiment in any shape or form to the disadvantage of its customer, and the mill that does it will sooner or later be found out, and in the end lose more than it gained by the operation. Remember, then, that in this business, quality and uniformity are the necessary prerequisites of complete success, and that it is easier for a camel to go through the eye of a needle than for a tricky or unprincipled miller to abide in the kingdom of prosperity. He may get there for a season, but to remain—never!

Misfortune claims him, and has a right to him, and will overtake him some day or other as sure as fate.

The second and last point to which we would invite attention, is that it is a mistaken idea for a mill to place its account in the hands of an agent who already has more than he can properly manage. The writer is a millers' agent himself, and therefore speaks from experience, but one not open for engagements, however, as he has more on hand now than he can really attend to with credit.

There are those in the business, however, whose one aim is to get as many accounts as possible, and then, to use the quotations of one against the other—pulling the string on all alike, as it were, and giving the lowest the preference.

"Fair play is a jewel," but we see no fair play in that.

We know of agents, and splendid ones too, who make the boast publicly of having 20, 30, 40, 50, and even as high as 60 accounts each, and that fact solely has induced us to refer to the matter.

We see nothing to boast of in having 60, or even 20 accounts, but everything to be ashamed of.

Where is the agent who can do full justice to 10 mills, let alone 60!

Is it possible for any one man, or firm, to dispose of the output of 60, 50, 40, 30, or 20 mills? Why, the question is simply too absurd and preposterous even to consider.

But some agent may say that we are not expected to dispose of the entire output, as our mills have other agents and other sources of distribution.

Well, then, as you dispose of some flour, whose do you give the preference, first come first served?

Ah! no. Common sense and practical experience teach us differently—the mill that offers stuff the cheapest gets your orders every time, and no other.

What then becomes of your other mills after you have stocked your customers—have to wait and take their chances again next time, eh, when the same thing is likely to occur. We must confess that it is a pretty smart trick on the part of those agents who have so many mills on the string, for in that way they manage to block out competition which they

would otherwise have to combat. There is much more to be said on the subject, and at another time we hope to say it, but for the present we will conclude with this suggestion: That hereafter, when an agent solicits your account, inquire of him first of all how many mills he already represents, and if he should reply that that was a matter of his own and none of your business, or words to that effect, then make it your business to find it out before closing the bargain with him. We throw out these gentle hints from a sense of duty, and with no reference at all to any one in particular, but should an emergency arise, we are prepared to meet it, don our war paint and handle it without gloves.

The Baltimore flour market has ruled more or less active since our last report, but a gradual shrinkage in values has taken place, until now we note a decline of 75 cents from the highest on winter patents, straights and clears, and 50 cents on springs.

It seems strange that winters should be the weakest, particularly in the face of the shortness of the cereal and the small reserves everywhere in sight. This applies more especially to the better qualities, however, as the medium and low grades being scarce, hold their own pretty well, and not feeling the effect of the depression in patents, are managing to close up the wide gap which has heretofore existed between them.

Food products being generally short and high this year, the masses are turning their attention to flour, and in such cases where resources are limited, the lowest priced article is appropriated regardless of quality, hence the demand and relative firmness of the poorer grades. The increased consumption of flour, from this state of affairs, is already manifesting itself, for we hear it on all sides that cracker and bread bakers alike are doing 25 per cent more business now than ever before.

We have heard it stated also, that 50 per cent would not cover the improvement that is enjoyed by some in the business.

If such a condition is really general all over the country, and at this stage of the crop, then we need have no fears about much lower prices in flour. High grades though, are relatively much cheaper now than anything on the list, and the public should be educated to see it in that light.

Indeed, we have hardly ever known such a season as this for winter patents.

Ordinarily they could be placed here readily at 50 cents over the price of average straight, but strange to say, that line has completely vanished, and we now see them a drug on the market in instances at 25 cents over straights and occasionally at the same figures.

We are at a loss to account for this, unless it be that mills are increasing their percentages of patent to such an extent, at the expense of quality, that they are practically no better than straights and must therefore be sold on that basis or not at all.

There are those, of course, who maintain quality as of old, but we are speaking of the generality of patents which hang fire at what seem to be low figures. And then again clear flours masquerading as straights and straights from nearly points, made on the old burr system, are largely depressing and supplanting the honest and more desirable goods from the west.

If you call an extra a clear, a clear a straight, and a straight a patent in this market, it is bound to go with a certain class of buyers, and we regret to say that it is confined to no very small class either.

A certain amount of credulity is all right, but to encourage such dishonesty as that and pay a premium for it too, is beyond all reason and justification.

The past week has been a memorable one in this market for business. The improvement experienced in wheat at the beginning of the week enabled agents to get in some fine work at old prices, but since then mills generally have announced a slight advance, but at this writing, notwithstanding that fact, it would be difficult to duplicate late transactions, for the reason that everybody is now well stocked up, and even if that were not the case the present course of wheat values would not justify dealers in taking hold.

While city mills have made no change during the week, we note an advance of 25 cents on springs by leading jobbers, which puts their retail prices back again to where they were ten days ago. Minneapolis patents, which were going at \$5.65 early in the week, are now held at \$5.80. Other makes range all the way from \$5.40 to \$5.75, according to quality and condition, but owing to the slump in wheat today, nothing over \$5.50 could be obtained here for any thing.

One North Dakota miller is selling best patent here at \$5.20 in jute, 30 cents off of the barrel price, which makes it hard for those to compete, who refuse to allow more than 20 cents difference. Some large lines of fancy goods, however, were placed here by agents just before the break, at prices ranging from \$5.50 to \$5.65 in wood.

Those receiving the most attention and patronage, were the patents of the Galaxy Mill Co., of Minneapolis, Shotwell, of Fargo, North Dakota, Campbell, of Alexandria, Minn., and Welsh, of Henderson, Minn.

Spring bakers' have been relatively quiet this week, although one agent managed to sell a round lot of choice old wheat stock at \$4.60, which the mill has subsequently advanced to \$4.75. We quote the range for the new and old at \$4.35 and \$4.75.

Considerable has been done, too, in the "Cheap John" winters, heretofore referred to, while the standards and old reliables, being a little higher, have been held in the back-ground.

Ohio, Indiana and Illinois patents, straights and clears to arrive and on the spot range respectively as follows: \$5.25 @ \$5.50; \$4.90 @ \$5.24; \$4.70 @ \$4.90.

Near-by stuff is selling at the inside figures and also the product of one Ohio mill, while the balance of the offerings are generally held at the outside prices.

St. Louis quotations being \$5.75 and \$5.25 respectively for patents and extra fancy, are 25 cents above the Baltimore market.

With ruling prices for extras and super, mills should see the wisdom of turning more of their offal into flour instead of letting it all go into feed.

City mills have had a quiet trade for a month or more, until this week, when business brightened up with them amazingly. Sales of Rio extra at \$5.10 @ \$5.25, aggregate 8,000 barrels within a few days, with the indications of more to follow. We also note sales of 500 barrels super for Demarara, at \$3.20, price now, however, is \$3.25. Their output for September was about 45,000 barrels.

Clearances of flour for the month have been large, notwithstanding they tell us that this is no export demand.

Stock of flour in Baltimore, Oct. 1st, exclusive of that held by city mills, was 55,098 barrels, against 49,218 barrels a month ago, and 43,997 barrels Oct. 1st, 1889.

Most of this increase represents large holdings of old wheat flour which jobbers are compelled to carry at this season of the year and until the new is fit for use.

We quote the range of the market as follows:

Western winter wheat super	3 00 @ 3 50
" " " extra	3 75 @ 4 50
" " " family	4 75 @ 5 15
Winter wheat patent	5 25 @ 5 50
Spring " " "	5 40 @ 5 80
" " straight	5 00 @ 5 85
" " bakers	4 35 @ 4 75
Baltimore best patent	5 75 @ 6 10
" " choice	5 00 @ 5 85

Baltimore high grade family	5 50 @ 5 85
" " choice grade extra	5 25 @ 5 60
Maryland, Virginia and Pennsylvania Super	3 00 @ 3 50
" " Extra	3 75 @ 4 50
" " Family	4 75 @ 5 00
City mills super	3 85
" (Rio brands extra)	5 10 @ 5 25
Rye flour	3 50 @ 4 00
Hominy	3 50 @ 3 60
" " Grits	3 50 @ 3 60
Corn meal, per 100 lbs	3 50 @ 3 60
Buckwheat per 100 lbs new	3 65 @ 3 75

The wheat market here has experienced some wonderful changes since our last review.

Taking the December option as a basis, we have had a decline of 11 cents from the highest point reached, and a reaction of 3 cents from the lowest.

Cash wheat has been even more erratic than the options, showing a difference of 12 cents in the extreme range of prices. We have seen the worst though, now, probably, as values are on the upturn again, and while we must expect fluctuations, there is no reason why a little higher level should not be gained right along from this time out.

Receipts and clearances of the cereals are light but stocks show a gradual decrease, nevertheless. Exporters contend that foreigners do not want our wheat at these prices, while farmers deliveries abroad are so heavy, and that may be true, but while the manufactured article is going out of the country at the rate it is, we doubt if we could spare any of the raw material, even if a demand should happen to spring up for it. It appears to us that the millers will be able to take all the wheat on this crop without the assistance of exporters.

The movement in the northwest and tight money markets in the east, together with manipulation and speculation may have a tendency to depress prices temporarily, but it will be short-lived only as the hand writing is on the wall for ultimately higher values.

The sentiment of the whole country is for better prices. The people will be disappointed if they do not have to pay more money for breadstuffs, so why not accommodate them to that extent and hoist everything on the list, and at the same time give the poor farmer a chance to get on his feet again.

A similar opportunity to restore cereal values to a higher level may never present itself again, so why not make haste and take advantage of it ere it is too late. The last Government Report was a bullish document on wheat, but the "boys" loaded up too heavily in anticipation and as is usually the case, broke the market in trying to realize.

The situation, though, will be all the healthier after the longs are pumped out.

The strongest feature, to our mind, of this wheat question, is the small visible supply and restricted stocks in the east.

Should an export demand materialize, pray tell us where the stuff would come from to supply it?

The west is higher than the east and with no accumulations either. The tremendous decrease in the amount afloat is another thing, too, that will tell on prices before long. In fact, the whole situation is strong, and there is no use shutting our eyes to it.

Get on board, then, before the whistle toots and the gang plank is hauled in!

Milling wheats are becoming very scarce here; so much so that some of our millers have had to shut down temporarily.

Choice assortments are bringing very fancy prices, but even that fact fails to increase the supply. We predicted a sharp break in wheat when prices were at the top, and got it, and now look for a steady up of markets all round, with a possible dull spell pending spring wheat movement, after which, it would not surprise us to see the cereal touch \$1.25 on the seaboard.

The premiums on the futures are dwindling away, another straw in the right direction, and when the next advance takes place, it will likely be a tidal wave.

The Chicago operators are endeavoring to hold prices down, but it is only to get hold of more stuff at low rates, and cannot last much longer. We look for manipulation in New York December wheat, unless stocks then increase materially between now and then.

Speculation here is generally bullish, although we have some strong firms who look for lower prices.

Stock of wheat in Baltimore is 926,070 bushels. The movement of corn has not begun yet, so there is practically nothing to report on that subject.

Business is only restricted by the absence of stock, though there is an everlasting demand for the cereal, both at home and abroad.

Baltimore expects to take the palm again this year as the largest exporter of corn.

Prices are high and should insure an early movement.

Stock of corn in Baltimore is 219,105 bushels.

CLOSING AND COMPARATIVE PRICES.		
Wheat	Closing	Same time
No. 1 red.	to-day.	last year.
Spot	98 1/2 @ 99 1/4	82 1/2 @ 83 1/4
Steamer	— @ —	— @ 76 1/4
Fultz	95 @ 103	78 @ 88
Longberry	98 @ 103	80 @ 88
October	98 @ 98 1/4	82 1/4 @ 82 3/4
December	100 1/4 @ 101	84 1/4 @ 84 3/4
May	106 @ 106 1/4	— @ —

CLOSING AND COMPARATIVE PRICES.		
Corn	Closing	Same time
Mixed	to-day.	last year.
Spot mixed	55 @ 55 1/4	— @ 40
Smr mixed	— @ —	37 1/4 @ —
South white	58 @ 59	40 @ 42
South yellow	57 @ 58	40 @ 41 1/4
October	55 @ 55 1/4	39 1/4 @ 40
Year	53	38 1/4 @ 38 3/4
May	57	— @ —

J. Olney Norris, of the Silver Spring Mill, of Baltimore, who has been absent from business for a year, making a tour of the world, returned home last week and tells some ludicrous yarns about primitive milling in the Orient.

Louis Müller, ex-president of the Corn and Flour Exchange, and member of the well known grain exporting firm of Tate, Müller & Co., accidentally shot himself, Wednesday, Sept. 17, while out fishing and hunting with a party of friends. Mr. Müller had just gotten into a boat at the time, and seeing his gun in a dangerous position, was in the act of removing it to a place of safety when the trigger struck against the seat and discharged the entire contents of the weapon into the under part of his right arm near the shoulder. The ball in its passage penetrated his coat pocket and carried with it a portion of the letters and spectacle case therein, and also pieces of his coat-sleeve and lining. Medical attention was promptly summoned, and, after the extraction of the ball and other matter, Mr. Müller's condition was pronounced not necessarily serious, and he is now gradually convalescing. The accident was a great shock to the trade and the friends of the sufferer.

Chas. D. Fenhagen, secretary of the Gambrill Export Co., who has been rusticated at Atlantic City for a fortnight, has returned to his post much improved in health.

A remarkable coincidence has happened in Baltimore this month, the chairman and vice-chairman of the wheat committee on 'change having each been blessed with an increase in family.

The railroads leading into Baltimore, through pressure, have concluded to allow patrons six days to remove hay and four days to remove mill feed after arrival. This is a move in the right direction, but the trade wants every impediment removed and will insist upon it or else summon the interstate commerce commission to its relief.

Henry A. Parr, ex-president of the corn and flour exchange, and one of our largest grain operators and exporters, has gone off for a month with a stag party, to do the Rocky mountains and other points of interest in the far west.

Alex. Mann, of Boston, eastern agent of J. B. A. Kern & Son, the Milwaukee millers, was here this month calling on the trade.

Frank T. Smith, of the well-known

flour jobbing firm of Wylie, Smith & Co., of this city, who has been spending much of his time of late in European travel, is expected home some time this month.

Pillsbury's agent has been here recently again, making strong efforts in behalf of his flour.

Jas. H. Gambrill, miller of Frederick, Md., was in town recently, and of all the bulls we have talked with, he is the most pronounced and uncompromising.

Here is something of importance to all mills doing business with Baltimore. As their accredited representatives, agents here will necessarily be compelled hereafter to look to mills for redress and satisfaction where shipments of flour fail to come up to samples, and where, under the new rule in force on 'change, buyers demand what they have bought or its equivalent.

Among the exports from Baltimore in August were 33,810 bbls and 248,868 sacks of flour, 1,073,342 bushels of wheat and 460,247 bushels of corn.

The steamer Porteuse, which recently foundered at sea while enroute to South America, was largely laden with flour of Baltimore manufacture.

E. N. Gardner & Co., one of our leading and oldest flour jobbing firms, report that the last week in September was the heaviest and most profitable that they have had in business for eight years.

P. H. Macgill, vice-president of the C. A. Gambrill Mfg. Co., has covered himself with glory, for already his prediction that wheat would break 10c per bushel by the last of September, has been realized. Mr. Macgill, by the way, is generally on the right side of everything.

"Knickerbocker's" statement in the *Northwestern Miller*, of Sept. 26, that New York railroads allow 90 days free storage to patrons, has caused a cold chill to run down the backs of Baltimore flour dealers.

P. H. Hill and W. J. Reinicker, millers' agents of Washington, D. C., who include this city in their territory, have returned from their summer's vacation much improved in health.

The railroads leading into Baltimore have condescended to concede a point and substitute the following rules regulating the delivery and storage of flour at Baltimore on and after Sept. 1, 1890, for those issued Aug. 4, and heretofore referred to: "All flour arriving at Baltimore will be held free of charge, at owners' risk, for a period not exceeding six days, Sundays, legal holidays and day of arrival not included. If the flour is not removed within six days after arrival, it will be stored at the risk and expense of the owner and may be sent to private warehouses at the option of the company. If stored in the railroad company's stations or warehouses, the charge for storage will be 4c per barrel for the first 30 days or fraction thereof, 1c per barrel for labor and 2c per barrel for each succeeding period of 15 days or fraction thereof. All flour on hand Sept. 1 will be considered as having arrived on that date." Well, a half loaf is better than none, but the compromise effected shows conclusively, as predicted, that the roads are solely after the extra revenue which they imagine will accrue from this storage charge on flour, and are not actuated by any desire to be relieved of accumulations, as they would have us believe, else they would not offer to handle the stuff at cheaper rates than those at which it can be hauled and stored elsewhere. If they imagine that they can retain past patronage and a continuance of the movement of flour this way on that basis, the roads will be sadly mistaken, as no mill is likely to ship by a road whose policy is so foreign to the spirit of the age and accommodation as that.

Much to the surprise and regret of everybody in the flour and grain trade of Baltimore, the well-known exporting firm of Heald & Co. made an assignment

Tuesday for the benefit of creditors. Edward C. Heald, the head of the concern, was president of the corn and flour exchange, but in view of his trouble, promptly resigned that office. It is stated that the failure was caused by the firm being long on freights and short on wheat, a straddle, which is usually considered safe, but which in this instance not only proved unprofitable, but actually whipsawed the firm beyond recovery. They have offered to compromise with their creditors at 30c on the dollar. Everybody here to whom the firm is indebted has cheerfully signed off on that basis, and if those in the west, New York and Europe do the same, it will be but a short time before this well-known concern resumes business again.

Mr. Carhart, New York agent of the Daisy roller mill, of Milwaukee, was here recently, endeavoring to convince the trade of the superiority of his blend flour.

Henry A. Parr, ex-president of the corn and flour exchange presented Wm. R. Hammond, the leading grain broker of Baltimore, with a handsome diamond pin, in token of services rendered.

A representative of the Acme Milling Co., of Indianapolis, Ind., was here recently looking after trade.

Andrew J. Palmer, of Wilson, Palmer and Co., wholesale grocers and flour dealers of this city, has returned to his post, after a month's visit to the different northern resorts.

Much sympathy is felt and expressed here for Henry A. Wroth, statistician of the exchange, whose father dropped dead at his residence on Monday, October 6.

Death has also again entered the home of Harry D. Williar, of the flour firm of Geo. P. Williar & Son, this time robbing him of his wife, which makes it doubly sad when it is remembered that his father was taken only a short while since.

Peter New & Sons, among our busiest and most prosperous flour and grocery firms, have recently established a canning factory in East Baltimore, where the senior partner spends much of his time superintending matters.

The Baltimore fleet of South American clippers is fast arriving, and will carry the large purchases of Rio extra which have of late been noted in these letters.

The representative of A. A. Keene, of Philadelphia, who is agent of the Sidle Fletcher Holmes Co., of Minneapolis, was here lately soliciting orders.

We hear of considerable Kansas flour coming to Baltimore in the shape of consignments and going at very low figures. Dealers in instances are substituting it for spring wheat.

The board of directors of the Baltimore corn and flour exchange, accepted the resignation of President Heald and wisely selected Blanchard Randall, junior member of the firm of Gill & Fisher, to fill the vacancy. Mr. Randall is a refined, cultured and highly educated gentleman, and a perfect specimen of a nineteenth century business man. He is highly progressive, wide awake, and, in a word, possesses, in an eminent degree all the qualifications requisite for the honor which has been so unexpectedly thrust upon him.

Victor H. Brunn, the popular flour buyer of Wylie, Smith & Co., has gone to Atlantic City for a much-needed rest.

The puerile, kindergarten rule on 'change, which prohibits members from saying "damn" or "devil," unless "under extenuating circumstances," is adding considerable to the treasury in the shape of fines.

C. R. Knickerbocker, the handsome, popular and ever genial mill-furnisher of Jackson, Mich., was here recently, busily attending to the wants of city mills, and, judging from the length of his stay and the way his time was constantly occupied, we imagine that he booked some very heavy orders.

Through the arbitrary action of railroads leading into the city, a demurrage is now charged on all mill feed not removed from cars 48 hours after arrival—another nail in our coffin as a market.

Millers of the country, take notice: At a recent meeting of the board of directors of the exchange, the following by-law was adopted, which will be enforced and adhered to hereafter by the trade: "When flour, grain, feed, hay or any other merchandise is sold to arrive by sample or by description for track delivery, the seller is bound to deliver the goods unless voluntarily released from the obligation by purchaser, or unless otherwise agreed upon at time of sale."

ORIOLE.

Baltimore, Oct. 13th, 1890.

LEGAL MATTERS.

ESTOPEL TO DENY WATER POWER RIGHT.—Where the owner of land adjoining a pond of water backed up by a dam has no rights in the pond or interest in the dam, but enjoys for a series of years the benefits arising from the use of the pond, he will not be heard to protest against the rebuilding of the dam after a partial destruction, upon the ground that he had not granted his interest in land owned by him and flowed by the pond. [Alexander vs. Woodford Spring Lake Fish Company, Court of Appeals of Kentucky, 14 S. W. Rep. 80.]

MILL-DAM STATUTE OF NEBRASKA.—In Nebraska the owner of a mill-dam may proceed against the builders of a dam which interferes with his acquired rights, who have built their dam without obtaining the permit required by the statute, and recover such indemnity as he may show himself entitled to, without first procuring the sheriff's inquest provided for by law. [Kyner vs. Upstill, Supreme Court of Nebraska, 46 N. W. Rep. 261.]

Circuit Court of the United States for Western District of Pennsylvania. The Consolidated Roller Mill Co. v. No. 2, Nov. Term, 1887. R. R. Walker, vs. In Equity. Coram McKenna, Cir. J. and Acheson, J. R. Mason, for complainant. Parkinson & Parkinson, for defendant.

Acheson, J.: The bill in this case charges the defendant with the infringement of two patents relating to roller mills, one issued to Wm. D. Gray, and the other to Udolph H. Odell; but at the final hearing, the suit was pressed only as respects the former patent, and, hence, the Odell patent may be dismissed from consideration.

The patent to Wm. D. Gray is 228,525, and was granted June 8, 1880, upon an application filed May 2, 1879. Gray's invention relates to that class of mills in which horizontal grinding rolls arranged in pairs are employed, and consists (the specification declares) "in the improved arrangement of belts and pulleys for communicating motion to the rolls, and in other minor details." The patent contains several claims, but infringement of the first claim only is here charged. That claim is in these words:

"1. In a roller grinding mill, the combination of the counter-shaft provided with pulleys at both ends and having said ends mounted in vertically and independently adjustable bearings, the rolls C, E, having pulleys connected by belts with one end of the counter-shaft, and the rolls D, F, independently connected by belts with the other end of the counter-shaft, as shown."

The answer set up, among other defenses, a want of novelty and want of patentability, and non-infringement.

After stating in his specification that driving the wheels by gearing occasions great noise, and also a jarring of the parts of the apparatus and trembling of the mill floor, in turn causing an unevenness in grinding and a rapid and uneven wear of the rolls, Gray adds: "To obviate these difficulties and produce an even, steady motion, I discard the gearing hitherto employed, and substitute therefor a system of belting arranged in a peculiar manner, to give the proper direction and speed

to the rolls." And he mentions as an incident to his arrangement of belting, the further advantage that by simply removing the pulley of any shaft and replacing it with another of proper size, any desired difference in the speed of the rolls may be obtained, which, he states, cannot be accomplished except by a complicated arrangement of intermediate wheels, where gearing is used.

The specification, after referring to the accompanying drawings, explains the arrangements of belts thus:

"N represents the main driving belt, which passes to and around the pulley c of the roll C, thence downward and around pulley B of the counter-shaft B, thence upward and around a pulley e of the roll E, and back to the source of power, imparting to the rolls C and E a motion in one direction, and to the counter-shaft a motion in the reverse direction. From the pulleys b' b'' on the rear end of the counter-shaft B, belts P and R pass upward and around pulleys d and f of the rolls D and F, as shown in Fig. 2, imparting to said rolls a motion the reverse of that of the rolls C E. In this way the two rolls of each set are caused to revolve toward each other while being all driven from a common source primarily."

To fully understand the particular claim of the patent involved in this controversy, one other paragraph of the specification must be quoted:

"In order to adapt the counter-shaft B to perform the double purpose of reversing the motion of certain of the rolls and of acting as a belt-tightener, it is mounted, at opposite sides of the frame or body A, in boxes swiveled or hung in yokes, L, sliding vertically in guides or boxes, K, and adjusted up and down therein by screw-rods or stems S, the swivel-boxes permitting a slightly greater movement of the shaft B at one end than at the other without interfering with its free rotation, and thereby permitting the tightening of the belt or belts at one side of the machine without disturbing those at the other."

Gray's specification, as our quotations therefrom indicate, suggests the idea that he was the first to apply belt-drivers to roller grinding mills. But the fact is otherwise, as the proofs abundantly show. Nor was he the first to discard from such mills cog-gearing and friction-gears altogether, and substitute therefor belt driving. Confining our attention here to Mechwart's Austrian patent, granted Aug. 3, 1875, we find therein distinctly set forth the disadvantages resulting from the use of spur-gearing in roller grinding mills, viz, the disagreeable rattling, the rapid wearing away of the gears, and unequal movement and unequal wearing away of the rollers, and, also, the inefficiency of driving by means of frictional contact between the rolls, which latter, it is set forth, is only practical when the chop passes the rollers in very thin layers and not in coarse particles, and is not applicable when an unequal peripheral speed of the rolls is required. All these disadvantages, it is declared are avoided by Mechwart's invention, which consists in driving both co-operating rolls by means of belts, whereby also can be obtained an equal and also an unequal peripheral speed, while the diameter of the rolls, as well as the diameter of the belt pulleys, can be varied relatively to each other for different objects. Mechwart's drawings show as examples six different arrangements of belting, which, he states, are intended to illustrate "only some of the different arrangements of the belt-drive for roller mills, without exhausting the possible variations in its application." Figure 3, sheet A, shows a machine having two pairs of grinding rolls, the pairs being vertical and arranged side by side. A shaft mounted in the machine frame in fixed bearings, carries two pulleys, one at each side of the machine. A belt from one of these pulleys passes around a tightening-pulley at the upper right-hand corner of the machine, thence around a

pulley on the upper left-hand roll-shaft, thence around a pulley on the lower right-hand roll-shaft, and thence back to the driving pulley, and by this belt one roll of each pair is driven. From the other pulley, on the other side of the machine, a belt is arranged in a similar manner so as to drive the other two rolls of the pair. Without further description of the Mechwart system, it is enough to say that his patent disclosed roller grinding mills, single and double, with both vertical and horizontal rolls arranged side by side, driven by means of belts exclusively; his machine being equipped with adjusting or tightening pulleys, and having a shaft journaled directly into the machine frame and receiving its motion from the prime mover of the mill, either directly or by belt.

But turning now to machinery employed in the arts generally, it is certain that the use of belt-gearing interchangeably with or as a substitute for cog-gearing was very old and common before Gray's alleged invention. It was, too, an old and familiar expedient to keep the belt adjusted to a proper degree of tightness by means of tightening pulleys, the shafts of which, in revolving, sometimes did other work about the machine; and shafts had been made movable in such manner as to tighten belts passing over pulleys on other shafts. It was also old and very common in machine shops and factories of various kinds to provide an individual machine with a counter-shaft mounted directly in the machine-frame, the counter-shaft being driven by a belt from the line-shaft, and the machine by a belt-shaft from the counter-shaft. Furthermore, it was no new thing to provide the journal boxes or hangers in which counter-shafts are mounted with means for independently adjusting the ends of the shaft.

In view of these things, then, we are unable to discover any patentable subject-matter in the first claim of Gray's patent. The case, it seems to us, falls directly within the established principle that the application of an old process, machine or device to a like or analogous purpose, with no change in the mode of application, and no result substantially different in its nature will not sustain a patent, even if the new form of result has not before been contemplated. Penn. Railroad Co. vs. Locomotive Truck Co., 110 U. S., 490; Blake vs. San Francisco, 113 U. S., 679. Moreover, it is quite clear that the application of belting to drive roller-grinding mills to obviate the difficulties incident to the use of cog-gearing and to secure the advantages set forth in Gray's specification, did not originate with him, therefore, even if it were conceded that his peculiar arrangement is attended with better results than had been attended previously, still this would not sustain the patent, for the mere carrying forward of an original conception resulting in improvement in degree simply, is not invention. Burt vs. Evory, 133 U. S., 349. After the most careful study of the subject, we think the conclusion is unavoidable that the combination set forth in Gray's first claim evinces only the exercise of ordinary mechanical or engineering skill, as the same has been defined by the supreme court and illustrated by so many recent decisions of that tribunal. Hollister vs. Benedict Mfg. Co., 113 U. S., 59; Thompson vs. Boisselier, 114 U. S., 1; Aron vs. Manhattan Railway Co., 132 U. S., 84; Hill vs. Wooster, Id. 693, 701; Howe Machine Co. vs. National Needle Co., 134 U. S., 388.

It seems to be proper for us to add that our judgment is with the defendant upon the defense of non-infringement also. To understand the nature of the invention intended to be covered by the first claim, resort must be had to the specification, and we there find that the "swivel-boxes" are essential to the contemplated greater movement at one end of the shaft than at the other, whereby is effected "the tightening of the belt or belts at one side

of the machine without disturbing those at the other." This is apparent on the face of the paragraph hereinbefore quoted at length, and the expert testimony is direct and convincing that to the practical working of the described device as a belt-tightener, this swiveling feature is indispensable. Without the swiveled boxes Gray would not have "independently adjustable bearings." True, these boxes are not expressly mentioned in the claim, but we think that they are to be regarded as entering therein by necessary implication, for the reason just stated, as well as by the force of the words "as shown." Moreover, the prior state of the art would limit the claim to the specific organization shown and described. Phoenix Castor Co. vs. Spiegel, 133 U. S., 360, 369. But the organization the defendant does not use. His alleged infringement consists in the use of a roller mill manufactured under and in accordance with letters patent No. 334,460, granted Jan. 19, 1886, to John B. Obenchain. In the defendant's machine the journal-boxes are rigidly supported so as to be always horizontal and incapable of any tilting or swiveling motion, and this is essential to the working of the apparatus. A continuous counter-shaft is not employed, but three coupled base shafts, the outer shafts or sections being each journaled at the outer end in a vertically adjustable non-swiveling box, and the inner end of each being forked and carrying a loosely-pivoted ring. These two rings are connected with a tumbling rod forked at each end and pivoted to the rings, thus forming a universal coupling; and thereby, through the central shaft or tumbling-rod, rotary motion is transmitted from one of the end-shafts or sections to the other, no matter how much they may differ in vertical position.

Now, for the reasons already given, we are of the opinion that such a construction of Gray's first claim as would embrace the Obenchain device is inadmissible.

The foregoing views being decisive of the case, we deem it unnecessary for us to consider the other grounds of defense.

I am authorized by Judge McKennan to state that he concurs in the conclusion announced in the foregoing opinion.

Let a decree be drawn dismissing the bill of complaint with costs.

UNITED STATES OF AMERICA, } ss.
Western District of Pennsylvania. }

I, H. D. Gamble, clerk of the circuit court of the United States for said district, do hereby certify that [SEAL] the foregoing writing is a transcript of the original thereof on file and remaining on record in my office, in the cause therein mentioned.

Witness my hand and the seal of said court, at Pittsburgh, in said district, this 15th day of September, A. D., 1890.

H. D. GAMBLE, Clerk.

WARNING TO EMPLOYEES MUST BE SPECIFIC: In the course of his employment, it was the duty of a boy to place finished files upon a steam coil to dry, and in so doing he stepped upon a tank of hot water, and was injured by slipping into the tank. It was shown that he was ordered to place the files on the coil at another place, and that had he obeyed the order he would not have been injured. But this does not relieve the master from liability, unless it appears that the boy was specifically warned of the danger presented by the tank. The warning of dangers to which employees are entitled, must be explicit and direct. Honahan vs. New American File Co., Supreme Court of Minnesota, 20 At. Rep. 268.

"BEGOB, but I've got the best of that murtherin' railroad this time, anyhow," said a Hibernian who had a grudge against the company in question.

"How is that Dennis?" asked a bystander.

"I've bought a return ticket, and I'm not coming back at all, at all!" was the triumphant reply.—*Boston Com. Bulletin.*

American Steam Gauge Co.,

—SOLE MANUFACTURERS—

Bourdon Steam Gauges,

WITH LANE'S IMPROVEMENT.



THOMPSON'S

Improved
Indicator

Over 2,500 in Use.

American Pop Safety Valves,

For Locomotive, Stationary and Portable Boilers, and Instruments Incidental to the use of Steam. Send for Price List I.

36 Chardon St., BOSTON, MASS.

Send for Catalogue K.

WANTED—SITUATION.

A gentleman well acquainted with the flour business, both export and domestic, desires to represent some good northwestern mill, either in the lake cities, eastern cities or abroad, or would take the management of a mill.

Address, "Y," UNITED STATES MILLER, Milwaukee, Wis.

FOR SALE—In Wisconsin.

125-bbl. roller flour mill, 4 stories, frame with stone basement, including plenty water power for 4 water wheels. Flume, dam and mill in good condition. Frame warehouse and office close by, and long sheds for farmers' team. The whole property in full operation 16 hours daily, doing profitable business. Has big grist business. City of 2,000 population; two railroads. Good trade with citizens, farmers and lumbermen, for flour, feed and rye. Good local grain, and plenty of it. Good place to live, has good schools and churches, and close to other large cities. Owner non-resident, which is reason for selling. Address,

MENASHA WOOD SPLIT PULLEY CO.,

4-11 MENASHA, WIS.

MILL FOR SALE.

4-story stone; full roller process; 100 barrel capacity per day; all new; steam power; good wheat crop. Mill at Walker, Kan., on K. P. R. R. Price \$8,000; 1/2 cash; balance 2 years at 8 per cent.

RAYMOND & POOLE,

8-3 Room 4, Jacobson Bldg., DENVER, COL.

Flour Mill and Elevator.

The undersigned are prepared to receive offers for the purchase of a 200-barrel steam power roller process flour mill, situated on the main line of the Canadian Pacific Railway, in the center of one of the best wheat growing districts of the Northwest, at a point specially suited for the trade of British Columbia and Eastern markets. Also three grain elevators situated at good centers for the purchase of wheat, having a combined storage capacity of about 65,000 bushels. For further information apply to Osler & Hammond, Toronto, Ont., or to Osler, Hammond & Nanton, Winnipeg, Man. 9-31

FLOUR MILL FOR SALE—In Little Rock, Ark., with a capacity of 350 barrels every 24 hours; roller process; modern machinery. Has been in successful operation and paid handsomely. Will be sold at a bargain. Satisfactory reasons for selling. The machinery, building and site are all that could be desired. Full particulars by addressing THE ARKANSAS PRESS, Little Rock, Ark. 61f

FOR SALE, EXCHANGE OR RENT—A good 50-barrel roller, water power mill, in thorough repair, in Eastern Dakota, one and one-half miles from station. Would take good rentable property in or near city in exchange. Address Wm. CHAZER, Dry Bridge, Chesterfield Co., Va.

FOR RENT, SALE OR EXCHANGE—A new 50 to 75 bbl. steam roller mill, on Soo Railroad, 15 miles from Minneapolis, Minn. Wood only \$1.50 per cord; large crop; splendid farming country around mill; nearest mill, 15 miles; modern machinery. L. P. VAN NORMAN, owner, 615 Guaranty Loan Bldg., Minneapolis, Minn. 8-2

PATENT OFFICE MODELS

—AND ALL KINDS OF—

Light Experimental Machinery

MADE TO ORDER IN WOOD OR METAL.

Send Sketch or Drawing for Estimate.

F. CASEY,

Box 64, HARRISONVILLE, OHIO.

ALL persons desiring to reach the entire milling and grain trade of America, by circular or otherwise, should obtain a copy of CAWKER'S AMERICAN FLOUR MILL AND GRAIN ELEVATOR DIRECTORY FOR 1890-91.

PENNSYLVANIA MILLERS CONVENTION.

THE 13th annual convention of Pennsylvania millers, was held in Reading, Pa., Oct. 7th and 8th, a goodly number of millers being present. B. Frank Isenberg, after being president for eight years, retired and Judge Cyrus Hoffa was elected to succeed him. President Isenberg reviewed the history of the Association in which he referred to the National Association as follows:

If our State Association has been a benefit to us, why would not the National Association be also? And if so, why do not more of our State members join the National? If you remember, a vote was taken by proxy through our executive committee on the subject, "Shall we ally ourselves with the National Association?" Almost ninety per cent of the votes were in the affirmative. As a matter of fact, the executive committee carried out the desire of the members on this point, and we stand to-day allied to the National Association. How many members who voted "yea" have acted as they voted I cannot say, but I must confess if they desire to be consistent and to embrace the benefits that may be incurred by such action they should make haste to enroll themselves as members of the National Association.

Sec'y Landis Levan reported the membership encouragingly large and all members in good standing. The treasurer's report was satisfactory. The report of the Committee on machinery and processes was submitted as follows by Chairman Philip F. Maus:

Your Committee on machinery and processes have very little to report. The past year has been one of no startling changes in milling. The inventor of mill machinery can not hoodwink the mill owner as he did fifteen years ago. And it takes something to-day of more than ordinary excellence to startle the milling fraternity. Only one machine of any notoriety has come before the public. The Knickerbocker Co., of Jackson, Michigan, has brought out a new purifier doing away with the sieve motion, claimed to be dustless. To save power and room such men as Homer Baldwin recommend it, which is sufficient guarantee that it has merit. The long and short systems are still agitated, but we think that it is conceded by the leading millers in our Association that three to four breaks on wheat are sufficient; any more than four a superfluity. But five or six pairs of rolls should be used in mills of one hundred barrels or less for finishing. Some mill builders are advertising four pairs of rolls, two reductions on wheat and two on middlings. In our opinion this is radically wrong. How any miller can make a finish on tough wheat with two pairs of rolls is above our comprehension. A great number of these little mills are being built, and it is a notorious fact, that where they come in direct competition with mills of plenty of roll surface and sufficient bolts to handle the stock scientifically, they are a total failure and a curse to their owners.

The Association ratified the vote of members taken by mail which was largely in favor of affiliating with the Millers' National Association. Mr. W. Latimer Small read an essay entitled "Milling in Pennsylvania and how it can be made Profitable" We submit it herewith:

The manufacture of flour in Pennsylvania, compared with that of twenty years ago, has lost its earning power of profit. Pennsylvania, to-day, consumes more wheat than is raised within its borders. Eastern and Southern Pennsylvania export a limited quantity of flour, while Central and Western Pennsylvania draw largely of wheat and flour from the Western States. Any miller who will look around him will see old water-power mills abandoned or dilapidated, while new steam roller mills have been erected by the side of the railroad. The old stone mills of twenty to twenty-five horse-power situated ten miles from the railroad—the miller in his wamoose, with bare feet, sitting in the door waiting for his dam to fill, while a picturesque object, is of the past.

The preference for rolls as grinders has been decided. The roller mill at the railroad replaces twenty old stone ones. The situation saves hauling, while coal at present price—twenty-five to thirty pounds used to make a barrel—say four cents per barrel for fuel, with scalpings, aspirators, short bolts, centrifugals and

bran packers, with a yield of 4.25 to 4.42 bushels to a barrel, and 94 per cent of good straight grade flour—soon makes its home market. Your farmer will haul towards the railroad, where the telegram just received will fix the price of his load. He will trade where prices originate. Science is also a factor. Milling of to-day is a science—returns, re-grinds, cut-offs—is a study that cannot be learned from books.

Western millers have the advantage, inasmuch as their mills are of new construction, building and machinery, while ours are mainly new machinery in old buildings, often inconveniently situated. Their system of selling flour and drawing with bill of lading attached, makes the sale secure, with a quick return. Our millers pay cash for their grain and give credit of thirty, sixty, or ninety days. The Western millers have in charge of their mills, active young men who have learned the new system without being hampered by the old.

The Pennsylvania millers are imposed on by freights. Why should we pay Philadelphia and Baltimore rates on Western wheat to our mills, when we are sixty to one hundred miles nearer the point of shipment? Then the freights from stations near the mills to the sea-board, say fifty, sixty, or seventy miles north and west of Philadelphia, are so low that to stop wheat at your mill compels you to pay Philadelphia price. Further, milling in transit is allowed in Pittsburgh and west of Pittsburgh; why should it not apply to Central and Eastern Pennsylvania? Our millers are compelled to pay Philadelphia price for their wheat and cooerage, then freight to Philadelphia and Baltimore on their flour.

To place ourselves on fair competition with Western mills we should have the advantage of our situation—i. e., milling in transit, an allowance for the distance we are short of the sea-board. We are certainly handicapped by the railroads. The saving of freights would be in itself a profit. This society should give such expression and take such action that the railroad companies would allow us to live. The Buffalo, Rochester, Syracuse and Albany millers were in the same situation until they went before the New York Legislators, and, as a compromise, obtained milling in transit for the New York roads.

Mr. Dayton read a paper entitled "Freight Discriminations. How do they operate against the Eastern Miller?"

Following discussion of the paper a resolution was adopted authorizing the President to appoint a committee of five in relation to milling in transit, with a view to securing it for Pennsylvania millers.

J. M. Maguire read an essay on "Credit—Its Uses and Abuses."

Election of officers then took place which resulted as follows:

For President, Judge Cyrus Hoffa, Lewisburg, Pa.

First Vice-President, Joseph Bosler, Ogontz, Pa.

Second Vice-President, J. V. Edge, Downingtown, Pa.

Secretary and Treasurer, Landis Levan, Lancaster, Pa.

The Detwiler patent case was brought up and discussed and an assessment of \$10 on each membership ordered to raise money to defend the suit. In referring to this matter Mr. Sellers is reported to have said: "I don't think Detwiler has a shadow of a chance to make anything out of his suit. The system is simply to run milling from one buhr to another. If that is gradual reduction, it is different from all others."

J. M. Maguire's paper on fire insurance was then read. This was followed by Mr. Welsh's paper entitled "Options; What are they and of what use to the Miller?"

Mr. Hoffa then read the following interesting paper on

MILLERS' ASSOCIATIONS—HAVE THEY BEEN OF A PECUNIARY AND SOCIAL ADVANTAGE?

"Does it pay?" is the great question of the age. Money is the great lever of the world; with it almost everything can be accomplished; it lets a man into all the kingdoms of this world; it is the *ne plus ultra* of life, and therefore the universal desire is for pecuniary benefit or advantage. For thirteen years this Association has had its yearly meetings. During that

time the whole milling system of the world has been changed. Reductions, purifying and bolting are all different from what they were when it was first organized. The old mill stone, which, for thousands of years had been used for reducing the wheat into flour, has passed away with the sickle, the cradle and the flail; the hexagon reel has seen its day; round reels and centrifugals are shoving it aside. Even the water wheel is being supplanted by steam, as the water supply has been uncertain and unreliable. All these different machines and processes have been covered and re-covered by patents, just and unjust—largely unjust—and frauds, stolen from innocent inventors. Nearly all the unjust claims have been dropped after many years of litigation. Why? Because of the perfect organizations of the milling fraternity in their associations which have resisted all unjust claims and fought them to the bitter end. The Millers' National Association has stood like a rock of defense against all imposters, and to-day is the great bulwark of the milling fraternity. These organizations have saved millions for the millers and will save millions more. The Pennsylvania Millers' Fire Insurance Company is a direct product of the Millers' Association, and to-day is one of the best and safest and most economical insurance companies. This of itself is a pecuniary benefit far beyond the expectations of its most ardent supporters.

Again, if millers can learn to mill intelligently and profitably from information obtained in these associations, it will pay. Men learn by contact with others in the same business. The best modes of milling, the best machines to use, the best grain for milling, the loss by evaporation, the wear and tear, the interest account and all expenses connected with the production of flour have been discussed intelligently and profitably in these associations, and the millers who attend these meetings have gone home wiser and with more practical knowledge of their business. Competition is great, but the worst of it comes from men who have little, if any, knowledge of cost of their product, and make it a rule to sell cheaper than others and make financial wrecks of themselves and often drag others with them, all because they have not learned the first principles of the business.

There is one other class that is still worse—those who have neither money nor business knowledge, and very little moral character. They plunge in like a bat coming in the window of a dwelling, which cannot be driven out except with brooms and clubs; and unfortunately, if one generation of this class is extinguished by financial wreck and ruin, another brood takes its place. Let the millers of the country learn to mill intelligently and to know the exact cost of every barrel of flour and calculate all expenses, wear and tear, shrinkage and loss by evaporation, etc., and the days of ruinous competition will be over. The discussion of these things in the associations, both State and National, have a tendency to prevent ruinous competition by educating millers to learn to mill intelligently and profitably.

Are the associations a social advantage? Emphatically they are. Millers, like farmers, are an isolated class, scattered all over this broad land; they hear much of each other, but seldom meet. Every day in the year they feel the pressure from two sides, standing between the buyer and the seller, neither of them ever satisfied; the one always wanting more for his grain than it is worth, and the other wants to get the flour for less than it cost. They both "want the earth." The one wants the cash, the other wants indefinite trust; between the two the miller is scoured, brushed, rolled, ground, and re-ground until daylight becomes a vexation and the nights a succession of nightmares; hence his only safety is to flee occasionally from these surroundings and spend a day or two with those similarly situated to receive the sympathy and encouragement of his brother millers, and take that social recreation which becomes an absolute necessity.

Millers, as a class, from time immemorial, have been noted for their jolly good natures; and the wonder is, taking into consideration their surroundings, that this reputation has been maintained for so long a time; but there is a buoyancy of spirit within them that can only be seen in the social circle. Those who had the pleasure of accompanying the millers in their excursion a few years ago to that greatest milling center of the world, Minneapolis, and partook of that magnificent banquet of three hours' duration at the West Hotel, given by the whole souled, liberal hearted millers of that city, have some idea of the capacity of their guests

and of the jolly good nature the occasion inspired. When speech after speech, bristling with wit and humor, were delivered with such oratorical power that it seemed as if the whole milling fraternity were imbued with the spirit of Demosthenes; when that grandest of all excursions, thirty-one days on Pullmans across the continent, extending to San Francisco and thence through Oregon and Washington, returning by way of Yellowstone Park, having crossed those grand mountain ranges, the Rockies, the Sierra Nevada, the Cascades, peaks covered with eternal snow, and gazed at the scenery in Wonderland—sights beyond accurate description—the liberal and unselfish spirit of the millers again manifested itself.

As the years of time have passed away we revert to the setting sun, and in imagination live it all over again. Ties of friendship have been formed during those times that can never be severed. Some have passed through the valley since then and gather with us no more; yet in recollection we see them now as if still present. We love to think of them and cherish their memories, but they have only preceded us and have laid down their burdens:

"The names we love to hear,
Have been carved for many a year,
On the tomb."

A number of matters were discussed in an informal manner and the convention adjourned, after which about fifty participated in a trip over the Gravity Railroad to the top of Mount Penn, as guests of Aug. Wolf, the well-known Pennsylvania mill furnisher. Taken all in all, the convention was a pleasant and profitable affair.

THE MANCHESTER CANAL AND THE CORN TRADE.

For various reasons the Manchester Canal has a special interest for the corn trade. The consumption of cereals (including wheat, flour, barley, oats and maize) is greater in the district of which Manchester is the centre, than in any other part of the United Kingdom. The imported cereals are now brought into the Manchester district through the ports of Liverpool, Hull, West Hartlepool, Fleetwood, &c. Manchester must become a large distributing centre for grain and flour, and it is the opinion of traders, who have made a signed statement to that effect, that an import of at least one-half the quantity now landed at Liverpool will be carried over the Manchester Ship Canal so soon as it is completed. One-half the grain and flour imports at Liverpool for the year 1884 was 649,252 tons. Taking the average consumption per head of population, this quantity is not sufficient to serve the district to which other provisions are now carted from Manchester. The canal toll and wharfage, payable upon the above-named 649,252 tons of cereals, say 4s. 2d. per ton would amount to £135,260. The import of cereals into the United Kingdom was, in 1883, 7,942,360 tons. It is said of the company that, assuming there will be a similar percentage of increment from 1883 to 1893 as there has been from 1873 to 1883, the import in 1893 will amount to 12,747,497 tons. If the increment continues to 1893 as indicated, and the 949,100 tons which have allocated be carried on the Ship Canal in that year, there will still be an increment of more than 40 per cent. for Liverpool and the other ports to divide in addition to their 1883 traffic.

The general opinion seems to be that the canal will make Warrington, Salford and Manchester large and important centres of the corn trade, and would also give millers in those districts an advantage of some 4s. per ton over those at present enjoyed. In fact, the saving of the dock dues at Liverpool and the railway rates will be such that it will be possible to get corn in Manchester at the same price as now paid at Liverpool. As the railway rate is now 5s. 8d. per ton, this will mean a great saving on the year's expenditure.—*Journal of Commerce and Intercolonial Trade*, London, Eng.

We shall be pleased to receive from any of our readers, short, crisp, sensible letters on subjects of interest to the flour and grain trade for publication.

From our Regular Correspondent.
OUR BUFFALO LETTER.

THE predictions in the United States MILLER during the dull spell in flour some two months ago, that there would come a time to unload the heavy stocks at a profit, is past and gone. The then downcast miller is now filled with bright hopes of the future owing to the fact that he is sold ahead and has the wheat bought in at a fair profit. Such is life; one day we carry the earth upon our shoulders and the next we can sing that good old consoling hymn in which the lines occur:

"The world is under my feet."

Although it cannot be said that flour is scarce, yet the agents of north-western mills are not as anxious to offer round lots with the same assurance as formerly, in fact, some of them are out of the market for days at a time.

Speaking of flour from the great north-west the enormous receipts by lake at this port show a startling increase over previous years. The season's business this year, however, overshadows all expectations, standing as the figures do from the opening of navigation on April 1st to the 11th day of October, at 4,212,700 bbls, as against 3,270,300 for practically the same time last year. Nearly 200,000 barrels were on the docks and in freight houses one day this week awaiting shipment east.

The following tables will be of interest, showing the receipts of grain and shipments from this port from the opening of navigation to Oct. 11th.

Lake receipts:

Wheat,	Corn,	Oats,	Barley,	Rye.
1800, 17,470,524	36,989,426	11,653,966	1,687,028	1,142,812
1889, 16,430,720	34,180,069	10,994,388	224,400	1,044,000

Shipment by canal:

1874, 8,774,144	18,303,450	2,450,038	984,604	563,702
1881, 10,717,258	18,397,069	2,750,231	250,209	823,670

Shipments by rail:

1890, 4,030,702	12,871,024	7,061,342	364,631	216,167
1889, 4,037,478	14,821,630	7,564,875	90,572	242,031

It will be seen from this that the canal is still ahead of the rail over six millions in spite of the fact that 300 canal boats were laying idle along the wharves for many weeks, refusing to take 3¢ on wheat to New York. The railroads, too, fell off four millions from last year. But is highly probable that a different story would have been told had there been even a fair allowance of cars. Railroads were forced to give their grain to the canal, owing to the scarcity of cars, and pay the difference. The situation is only slightly improved now, but there is no doubt that the canal will have all it can do until December 1st, the time fixed for its closing.

The enormous carrying capacity of the steamers to-day as compared with the vessels on the lake in 1842, when Capt. Frank Perew says he heaped wheel wheat aboard a 5,000 bushel craft, was never better illustrated than recently, when the Susquehanna, the Weed and the America came in on the same day with 322,500 bushels of corn. These cargoes were all consigned to C. H. Warfield, what a big man the receiver of so much grain would have been, say only 10 years ago.

Some time ago Mr. R. B. Hefford put up an open tower with a hoisting leg, buckets holding about a bushel, a hopper and scales for the purpose of transferring coal. This stood idle for a year, owing to a falling off in the canal coal trade. A week or so ago workmen were engaged to repair it, and a few days later a cargo of wheat was sent to be transferred into canal boats. Mr. Hefford had with him the shrewdest grain man on the exchange, Mr. E. W. Eames, and it was evident there was some scheme afloat. The cargo was transferred, but it took time and plenty of it, together with considerable loss of grain which went into the river through the leaky buckets. Two such enterprising gentlemen as Messrs. Eames and Hefford will not stand knocking at the door of the elevating association very

long before being invited in, and that very politely, too.

Mr. Thomas Chester, of the firm of Thornton & Chester, was out for the first time a week ago. His partial recovery from a severe stroke of apoplexy, at his age, is a surprise to everyone.

Mr. Charles E. Drake has formed a co-partnership with E. W. Eames, of this city, in the general commission business at Rochester.

The hints thrown out by the Buffalo correspondent of the *Northwestern Miller* regarding certain cutting of flour prices by a newly arrived agent from Duluth, are a little inopportune. It is well known here that this was a reflection on Mr. Daniel B. Strickler, agent for the Duluth Imperial mill. The gentlemanly flour seller from Duluth is not here for that purpose and he well knows, if he attempted to gain a foothold by such small methods, he would have a hard row to hoe. He is entitled to a share of the business here, and will get it. The cutting will be done openly when it is found necessary to do so.

Mr. Robert Dunbar, the man who built the first grain elevator in Buffalo, died September 25th. He came here from Scotland in 1834. The river is lined with elevators designed by him, and his plans have been used in many parts of the world. His inventive Scotch brain first conceived the idea of a sliding elevator leg. Quietly and unostentatiously he lived, and thus he died, with his talents appreciated only by those whom he served.

Mr. Hutchinson, of Chicago, is reported to have sent a message to his old consort, A. P. Wright, just before the advance in wheat, to sell December at \$1.00. This was a cold-blooded cut with a bowie-knife.

Mr. Alexander Mann is in Boston, according to the latest advices. His friends here hope he is having a nice, quiet, enjoyable time. If he stops much longer business will call Mr. Henry to the Hub.

The work of building the tunnel at Niagara Falls, was commenced October 4th. The ceremonies were attended by those interested in this great enterprise, which is to make this little village the Manchester of America. Speeches were made by Captain Chas. B. Gaskill, president of the Niagara Power Company and E. D. Adams, president of the Cataract Construction Company. There is nothing at present to mar the bright hopes of this company, except the fact that Professor Julius Pohlman, a geologist of considerable local celebrity, has declared that shale and quicksands will make the undertaking impracticable.

The meeting of the Canal and Harbor Protective Union, announced with a flourish of trumpets, for September 26th was the biggest farce ever attempted by the pair of fools, DePuy and Clark. Capt. De Puy took the floor and asked that all the railroad spies and robbers from the Merchants' Exchange, retire from the hall. He then sailed into Chauncey M. De Puy and everybody else. When he concluded there were only four men in the hall, one of them being that "arch enemy of the Standard Oil Company," Mr. C. B. Mathews, who was dying to get off a five hour speech. At a meeting of the canal men the next day to consider a reduction in freights, Capt. De Puy and Clark were to-day "fired" out of the room. Thus have the mighty fallen.

The hay inspection nonsense proposed by a member of the Corn exchange, who was anxious to secure "a soft job for a friend of his," was reported not feasible by the committee.

It is reported that Pillsbury will build a warehouse here for his flour trade. The owners of the Imperial Mill, at Duluth, are also inquiring for vacant dock property with a view of erecting a large storage house.

The receipts of hard wheat show signs

of improvement in quality, and it is thought our millers will now begin to purchase more freely for their winter supply. No. 2 hard, was stricken from the list some weeks ago. This will give us good No. 1 Northern, if Duluth persists in sending poor wheat to this market.

The uniform bill of lading has been abandoned by all the roads except the Central and West Shore, but only in certain cases.

Mr. George Urban, Jr., invited a party of 170 of our most prominent judges, newspaper men and business men to a sort of a social at his country residence recently. Not a man sent his regrets. Mr. Urban knows how to entertain a body of men of this kind better than any man in town. Grover Cleveland, and, I believe Gov. Hill also were his guests not many years ago, and right royally were they taken care of.

Something like a million bushels of barley were rushed into Buffalo by the Grand Trunk railroad during the first six days of this month. Uncle Sam collected \$103,000 duties and the government officials here gave the Canadians all the facilities possible to evade the 30 cent duty and beat him out of it. Big posters bearing this appeal were found on a large number of the cars: "For God sake hurry me through; Bill McKinley is after me."

Receiver Lang, of great Sherman Brothers, grain robbing case, has sent in his final accounting. The total indebtedness of the firm is \$303,241.63, divided among F. A. Bell, Edward Michael and E. C. Hawks.

Horace Hitchcock's new mill at Mayville, is to have a capacity of 150 bbls.

Milfeed is quiet, coarse winter bran selling at \$16.00 and spring at \$15.00, or white middlings 18.50@19.00.

Prices of flour to-day are the same as for the past week, viz: Best patent spring \$6.00@6.20, do winter, 5.00@5.25, rye flour, \$3.85@4.15.

E. J. Gillespie, who comes from Wisconsin, will run the Iron Bridge Mill at Alden, Erie County.

Several days ago Mr. Charles A. Warfield and Mr. E. W. Eames, broke the canal rates 1 cent and secured a few outside boats. To-day they were trying to ship but couldn't get a boat either from the association or outside of it, although there were 150 lying idle. The association evidently fix this deal and will warm the jackets of these two notable rate breakers. Having made the low rate the boys are now holding back to see what they will pay for boats before allowing them any. Its a fair game, and receivers without a burdensome amount of stuff on hand are chuckling over the turn of affairs.

The political pot is boiling and country millers are taking a hand with the boys on 'change in denouncing the McKinley bill.

Hard wheat is now 18 cents higher than it was at the same time last year. To all appearances it is high enough, and I look for a decline of about \$1.00.

BUFFALO.

Buffalo, N. Y., Oct 16, 1890.

NEWSE.—SAWYER, WALLACE & Co., of New York, grain exporters and dealers in cotton and coffee, lard and pork options, made an assignment Sept. 4. The losses will probably fall heaviest on London creditors on lard and pork deals.

COHN & BOCK are building a 50-barrel roller mill at Princess Anne, Md.

FRED. METZGER, miller, has removed from New Fountain to Hondo City, Tex.

J. T. Ensley & Co. have completed their 50-barrel roller mill at Plainwell, Mich.

A 75-BARREL roller flour mill has been started at Montague, Siskiyou county, Cal.

THE Ann Arbor Milling Co. succeed J. M. Swift & Co., millers at Ann Arbor, Mich.

THE milling firm of Dwight & Stiff at Plainwell, Mich., is succeeded by W. E. Dwight.

AT Kearse, S. C., September 13, J. Ritter & Son's mill was burned; loss \$5,000; no insurance.

MILLER, CHASE & Co., millers at Heron Lake, Minn., are succeeded by Miller & Saythe.

L. E. DONNALLY of Donnally's Mills, Pa., has let the contract for a complete 25-barrel roller mill.

SEPT. 29, the grist mill of J. H. Walker burned at Reidsville, N. C. Loss \$45,000; insurance \$20,000.

THE warehouse of Cargill Bros. at Arcadia, Wis., burned September 5 with about 1000 bushels of grain.

SEPT. 25, at Grand Rapids, Mich., the flour warehouse of Brooke & Pugh was burned. Loss about \$25,000.

AT Hartland, Wis., Sept. 23, fire destroyed the Fullerton Mills. Loss \$5000; the fire was of incendiary origin.

ARTICLES of incorporation have been filed by the Kritzer Milling Co. at Nawaygo, Mich. Capital stock \$50,000.

L. A. RIZER of Keyser, West Virginia, is building a three-story brick flour mill to replace the one recently burned.

JOHN C. PEARCE, a member of the firm of Pearce Bros. Milling Co., at Maysville, Ky., died September 12, aged 43 years.

AT Gordon, Tex., Sept. 19, the Gordon Roller Mill was burned. Loss \$30,000; insurance \$7000. J. J. Odem is the proprietor.

AT Tremont, Ill., October 1, the flouring mill of Bechtold & Son was destroyed by fire causing a loss of \$10,000; insured for \$2900.

SUMERSON & HADLEY of Windfall, Ind., are improving their flour mill which, when completed, will have a daily capacity of 150 barrels.

THE Cleveland Milling Co. of Cleveland, Ohio, have sold their flour mills to James Osborne, a capitalist and mill owner of Glasgow, Scotland.

ANTON, Henry and August Miller of St. Louis, Mo., have incorporated under the style of the Miller Grain and Elevator Co. Capital stock \$75,000.

FROM January 1 to October 4 the exports of flour from Baltimore aggregated 2,175,762 barrels against 1,594,565 barrels for the corresponding time in 1889.

EXPORTS of flour from New York for nine months ending September 30 were 3,223,852 barrels, against 2,985,532 barrels for the corresponding period last year.

HODGSON BROS., H. K. Nicholson and others have incorporated the Elevator Mill Co. and have purchased and will operate the Elevator Mills at Athens, Ga.

THE Menno Mill Co. has been organized at Menno, Hutchinson Co., South Dakota, with a capital stock of \$25,000. The company will build and operate a flouring mill.

ON the morning of September 7, at Belton, Texas, the flour mill of Benjamin B. Lee & Co. was burned. Loss on mill and stock \$45,000; insurance \$21,000. They will rebuild.

THERE were 18,242,378 bushels of corn exported from Baltimore during the period from January 1 to October 4, against 12,021,685 bu. for the corresponding period last year.

AT Winfield, Iowa, September 17, the flour mill and elevator of E. P. Corbit with 2000 bushels of grain were burned. Loss \$10,000; insurance \$7,000; cause of fire unknown.

FOR the nine months, ending September 30 the exports of wheat from New York aggregated 10,947,803 bushels against 8,089,429 bushels for the corresponding period last year.

F. M. SMITH's flour mill at Palouse, Wash., was burned September 5; supposed to be of incendiary origin. The citizens will aid, to the extent of \$2000, in rebuilding the mill.

STELLING BROS. are moving their 75-barrel roller mill from Reidsville to Cecil, Shawano Co., Wis. They expect to be ready for business at the new location about December 15.

AT Montgomery Station, Pa., September 12, the flouring mill owned by Frank Porter was burned together with a large quantity of grain and flour; loss \$15,000; insurance \$2000.

EXPORTS of wheat from Baltimore from January 1 to October 4 aggregated 4,449,826 bushels, or an increase of 1,120,487 bushels compared with the corresponding period last year.

AT Union, Ia., Sept. 18, H. J. Benson's flouring mill was struck by lightning and destroyed, together with 9000 bushels of wheat and considerable flour. The loss is \$80,000; insurance \$10,000.

AT Goshen, Md., Aug. 27, the flouring mill owned by R. D. Riggs and operated by G. W. Moxley was destroyed by fire. As the mill

had not been running for about 36 hours the cause of the fire is supposed to be incendiary. Loss \$5,000; insurance \$2,700.

At Mt. Sterling, Ill., Sept. 30, fire destroyed the Eagle Mills, Hickman Bros. & Co., owners; 1000 bushels of wheat and a large quantity of flour and feed were destroyed. Loss \$10,000; insurance \$3000.

ANTON KUFKE of Glasgow has begun suit against Bernhard Stern, owner of the Jupiter Mill at Milwaukee, Wis., for \$1500 damages, and alleges that defendant sold him 2000 bags of unmerchantable flour.

At Mt. Vernon, Ohio, Sept. 19, fire broke out in the grain loft of Israel's linseed oil works and elevator; 5000 bushels of wheat were damaged, and loss on building is placed at \$2000, all covered by insurance.

J. H. McDONALD & SON, owners of the Bay City Mills at Bay City, Mich., have concluded to increase the capacity of their mill to 300 barrels per day, and the foundation for the additional building is already laid.

THE Empire Mills Co. has been incorporated at Columbus, Ga., by G. W. Woodruff, A. C. Prather, T. M. Foley and others. The capital stock is \$150,000 and the purpose is to buy and operate the Empire Flour Mills.

THE De Smet Roller Mill at De Smet, South Dakota, owned by S. E. Morrison, has been enlarged and the capacity increased to 100 barrels per day. A new warehouse has also been built giving a storage capacity of 20,000 bushels.

THE Government crop report places the yield of wheat at 11.1 bushels per acre; indicating a crop of a little over 403,000,000 bushels. Corn gains half a point being 70.6 bushels against 70.1 last month. The aggregate wheat acreage is about 36,375,700.

On the morning of September 14, at Fresno, Cal., the warehouse of the Fresno Milling Co. was burned. The building was valued at \$8000 and the wheat stored therein at \$80,000. Insurance on building \$4500; on wheat \$80,000. The fire originated in a small dwelling house adjoining the warehouse.

THE contract for the large tunnel to be built at Niagara Falls has been awarded to Rogers & Clement, the New York contractors. The Cataract Construction Company is the owner of the franchise, and the tunnel is to be used to develop a large water power. Just what the amount of the contract is is not known, but it is away up in the millions.

THE Union Mills at Detroit Michigan, has been purchased by Kidder & Piper who will at once proceed to thoroughly overhaul and remodel it and make it as modern and complete as possible. The intention is to give the mill a capacity of 1000 barrels per day, and have it in readiness for operation about December 1st. The price paid was \$32,500.

THE Osakis Roller Mill at Osakis, Minn. purchased last spring by Geo. Tilleston and E. F. Chandler has been thoroughly overhauled—old machinery replaced and new machinery added. The mill as now fitted up has a capacity of over 200 barrels per day, is driven by two engines of 75-horse-power, is lighted by incandescent lights and provided with latest improved fire protection.

At Milford, Ind., the new firm of Ogden, Whetten & Co., consisting of Geo. Ogden, a well-known practical miller, John Whetten, grain merchant, and E. W. Higbee, banker, have completed and are operating the new Milford Model Roller Mill, which has a capacity of 75 barrels per day. They have an elevator of 10,000 bushels capacity in connection with the mill, all run with steam power.

THE flour mill at Adrian, Mich., formerly operated by the Wilson Milling Co., and which was partially destroyed by fire last spring, has been rebuilt by James H. Milne, who for the past 20 years was engaged in the flour trade at Chicago, Ill. The mill is driven by steam power, is thoroughly equipped on the Edw. P. Allis Co. system, has a daily capacity of 250 barrels, and was satisfactorily started and tested on September 12.

SPERRY & Co. of Stockton, Cal., have purchased a strip of land containing 50 acres, lying between Stockton and Mormon channels and having a splendid water frontage. They will build on the water front a grain warehouse with a capacity of 100,000 tons—equal to 3,335,000 bushels. An elevated railroad track, 1400 ft. in length, will be laid into the warehouse and by means of chutes grain can be unloaded from cars directly into boats. The present wheat storage capacity of Stockton is about 4,000,000 bushels which will be nearly doubled by this addition.

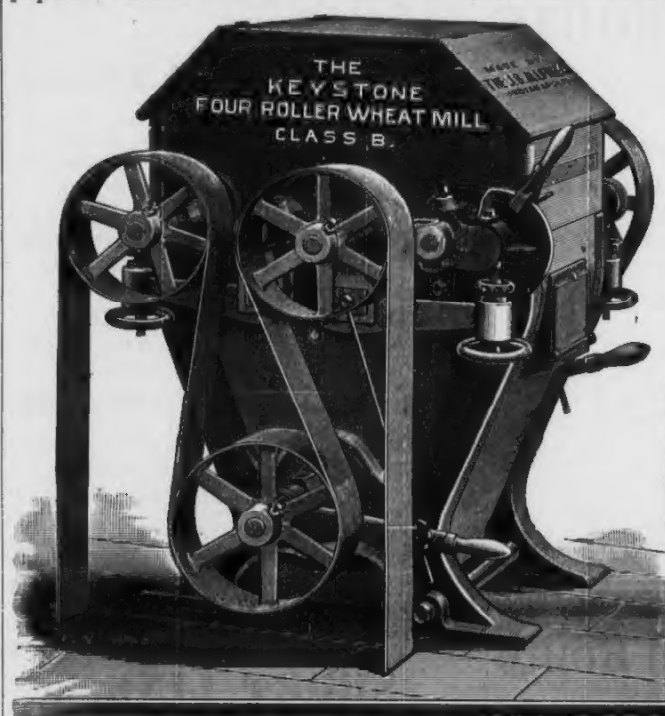
ARTICLES of incorporation have been filed by the Duluth Milling Co. The incorporators are F. A. Bean, Faribault, A. C. and D. G. Nash, Duluth, W. B. Logan, Flint, Mich. and M. Wheeler, Oneota, Minn. The capital stock is \$300,000 of which \$200,000 are to be paid in before business is commenced. The object of the company is to build and operate

a flour mill at St. Louis, a new townsite on the Wisconsin side of the St. Louis river, and about 8 miles above Duluth. It is their intention to have the plant in readiness for operation next season; it will have a daily capacity of 2000 barrels.

THE large oat meal mill of H. R. Heath at the corner of Fifth and Vine streets, Des Moines, Ia., was totally destroyed by fire between midnight and 3 o'clock on the morning of October 5. The fire department had great difficulty in saving the mammoth four-story elevator with its valuable contents from the same fate. The loss on the mill and contents is about \$50,000 and by damage to the elevator and contents probably \$25,000 more; the total insurance is about \$80,000. The mill had been closed for the past year under contract with the trust; but was recently opened and doing an immense business. The origin of the fire is a mystery and incendiarism is suspected.

THE "KEYSTONE" FOUR-ROLLER WHEAT MILL. Class B.

IN view of the objections many millers have to a solid frame roller mill, the J. B. Allfree Co. of Indianapolis, Ind., have designed an open frame machine, as shown in the accompanying cuts which they designate "Class B." This mill is further intended to meet the popular demand for a more simple and



CLASS B WHEAT MILL. DRIVE SIDE.

cheaper machine, and while retaining all the essentials embodied in the original "Keystone" roller mill, everything that could be successfully abandoned is discarded. The driving and retarding device heretofore used is greatly improved, an appliance being constructed by which the main belt may be tightened six inches without changing the tension of the hold-back or differential belt, while the counter-shaft bearings are always retained absolutely parallel, both being in one casting. This device is said by the manufacturers to be so far in advance of anything that has ever been constructed that it must strongly recommend itself to the users of roller mills. Each belt may be instantly and independently tightened without the slightest interference with others. This mill is constructed in a most thorough and workmanlike manner, the very best rolls and other materials being used, and altogether it is a strictly high class machine. Any information desired concerning this or any other machinery manufactured by them, will be furnished on application to the J. B. Allfree Co., 76-86 Shelby st., Indianapolis, Ind.

FIBRE OF THE FUTURE.

UNDER the above caption, the Savannah Morning News devotes two columns to the discussion of a new substitute for jute bagging, discovered by Mr. O. B. Warrand, of that city, who has patented inventions for the various processes for working up

ELEVATOR FOR SALE.

At Groton, South Dakota, in the hard wheat region, on the Hastings & Dakota Division of the C. M. & St. P. R'y, 20 miles east of Aberdeen. Steam power elevator, 20x30, and annex, 30x40, cribbed and bolted, with scales and all necessary appurtenances complete. Storage capacity 30,000 bushels. Purchases of wheat the past six years have averaged 80,000 bushels per annum. Will be sold for \$3,500 to close up an estate. Original cost \$5,960. Apply to

E. P. BACON, Executor,
MILWAUKEE, WIS.

Boone Flouring Mill and Elevators for Sale, at Boone, Iowa.

Admirably located for a jobbing and retail trade, near the center of the state, with outlet on two railroads with good facilities for getting the best varieties of hard spring wheat from northwestern Iowa, Nebraska and Dakota, and winter wheat from Kansas. A full roller mill with nine sets of rolls and two 4-foot middlings buhrs and one 4-foot buhr for feed and meal, together with all necessary machinery and tools in good repair. Two new steel boilers and engine with ample power. Situated on railroad track. Fuel used is coal at 75c. to \$1 per ton. The elevators have a capacity of 50,000 bushels, and are well adapted for buying and shipping grain with dumps. A number one corn sheller and cleaner, two sets of platform scales, etc., etc. A good office with steam heating. The buildings, except office, are of brick, with brick smokestack.

Boone is one of the best towns in Central Iowa, with excellent schools and a population of about 7,000. This property must and will be sold soon. For full particulars promptly address,

S. L. MOORE,
BOONE, IOWA.

the fibre into its several uses. This new substitute is distinctively a Southern product, and known as the saw palmetto, or palm, which grows luxuriantly in South Carolina, Alabama, Georgia and Florida.

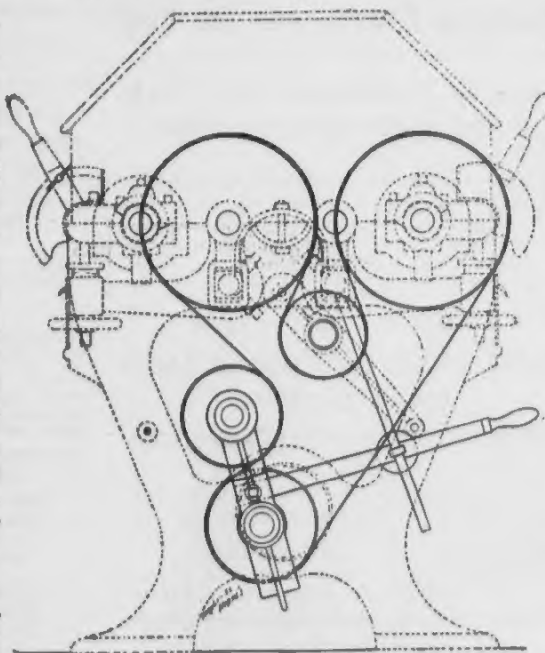
Mr. Warrand says that two tons of the green plant will make one ton of dry leaves and stems, and this one ton of dry material will produce \$25 worth of tannic acid, \$16.25 worth of bagging fibre and \$4 worth of fine refuse that can be utilized in paper manufacture; a gross moneyed production of \$41.25 for one ton of dried leaves, the material of which will cost not more than \$10 to \$12. He says that it will require ten tons of green pine straw to make one ton of fibre, and from thirteen to fourteen tons of cotton stalk fibre,

secured as manager of the Jupiter mill. The capacity of the latter is 800 barrels daily.

TRADE NOTES.

C. REUTHER & REISERT of Hennif, Germany, and 74 Cortlandt St., New York, sold over 410 "Chronos" Automatic Grain Scales during 1886, representing a capacity on wheat of 208,333 bushels per hour, or a daily capacity of 5,000,000 bushels. American capitalists are now forming a syndicate to acquire the right for manufacturing the scales in this country. Since its introduction in America it has been adopted by many of our prominent mills, notably Christian Bros Mill Co., Minneapolis, Minn., Duluth Imperial Mills, Duluth, Minn., H. P. Gill, Duluth, Minn., G. Urban & Co., Buffalo, N. Y., Attica Mills, Attica, N. Y., Jersey City Milling Co., Jersey City, N. J., (new 500-bbl. mill now being erected), and the National Starch Co., Glen Cove, N. Y.—a scale to weigh 2,500 bushels of corn per hour.

AMONG the recent orders of the Jonathan Mills Manufacturing Co., at Columbus, O., for their Universal Flour Dressers and Scalpers are the following, ranging from 1 to 10 machines in each case, many of them repeated orders:—Allen & Wheeler, Troy, O., W. A. Hardesty, Columbus, O., Commercial Milling Co., Detroit, Mich., Bradford & Prentice, Aberdeen, O., E. Corbett, Washington, D. C., H. K. Allen, Saltpetre Cave, Va., C. L. Miller, Vienna, Pa., (a complete bolting outfit), Model Roller Milling Co., Trenton, Ky., F. H. Robinson, Peruville, N. Y., D. W. Hammon, Tom's Brook, Va., J. H. McMillan, Spartanburg, S. C., C. E. Ballou, News Ferry, Va., (a complete bolting outfit), Wm. Randall, Burgettstown, Pa., A. H. Fairchild & Son, Honeoye Falls, N. Y., Miller, Jones & Co., Prospect, O., Wm. M. Zallman, Lexington, Va., (a complete bolting outfit), Kansas City Milling Co., Kansas City, Mo., E. B. White & Bro., Leechburg, Va., Falmouth Milling Co., Butler, Ky., Wood & Co., Piqua, O., C. H. Nicholas, Cowans Depot, Va., J. H. Gibbs, Edmore, Mich., A. R. Elson, Magnolia, O., Sioux Rapids Mill Co., Sioux Rapids, Ia., Melrose Milling Co., Evansville, Ind., Beddilion & Co., Elm Grove, W. Va., Fred B. Wolcott, Romeo, Mich., E. Corbett, Kearneysville, W. Va., J. H. Walker & Co., Reidsville, N. C., The Farmville Mills, Farmville, Va., Carolina Roller Mills & Supply Co., Fayetteville, N. C., Wonthers & Marson, Stephenson, Mich., (a complete bolting outfit), C. C. & L. A. Nickell, Ronceverte, W. Va., (a complete bolting outfit), J. W. Laubscher & Bro., Evansville, Ind., Camp, Geiger & Co., Union City, Pa., R. M. Clark, Meridan, Texas, Toledo Grain & Milling Co., Toledo, O., Kendrick, Pettus & Co., Clarksville, Tenn., Clay County Milling Co., Liberty, Mo., M. L. Peck, Cherry Run, W. Va., Post & Lynch, Clarksburg, W. Va., (a complete bolting outfit), Thos. M. Holt, Haw River, N. C., (a complete bolting outfit), S. C. Douglass & Co., Phillippi, W. Va., (a complete bolting outfit), R. E. Hale, Rocky Mount, Va., Power & Bro., Butler, Mo., Kings County Milling Co., Brooklyn, N. Y., A. S. Connelley & Co., Eastland, Tex., M. J. Schott, Roscoe, O., Brand & Hardin, Saginaw, Mich., Chas. Kuhlmann, Whipple Sta., O., Yeager Flour Mill Co., Carlinville, Ill., George W. Graham, Carbondale, Ill., E. Corbett, Fayetteville, N. C.



CLASS B WHEAT MILL. SLOW SIDE.

thus showing that the saw palmetto is more productive of fibre, as well as being a less costly material. He says that the two-pound jute is the standard bagging, whereas palmetto bagging weighing but 1 1/2 lb to the yard will be as strong as the 2 1/2 jute, and will not discolor the cotton like it is claimed that pine straw bagging will.

CIRCULARS are out announcing the dissolution of the Bernhard Stern Milling Co. The circulars state that all the stockholders consented to the dissolution, and that the assets and accounts of the company have been purchased by the firm of Bernhard Stern & Son. It was only a few months ago that the firm became a stock company. H. E. Brooks, formerly of the Winona Milling Company, has been

MONTANA, OREGON AND WASHINGTON.

The Northern Pacific Railroad, passing through Minnesota, Dakota, Montana, Idaho, Oregon and Washington was the first line to bring the region occupied by these States into communication with the East. Its main line and branches penetrate all sections of these States, reaching nine-tenths of the chief cities. It is the shortest line to Helena and Butte, Mont., Spokane Falls, Tacoma and Seattle, Wash., and Portland Ore., and the only line running through train service from the east, through the States of Montana and Washington. Pullman Sleepers and furnished Tourist Sleeping Cars are run via the Wisconsin Central and Northern Pacific, and Pullman Palace Sleeping Cars, via Chicago, Milwaukee & St. Paul and Northern P. office. From Chicago through to the Pacific coast without change. This is the Dining Car and Yellowstone Park Route.

The large travel on the Northern Pacific line necessitated the inauguration in June 1890, of a second through train to the Pacific Coast, thus enabling this road to offer the public the advantage of two through trains daily to Montana and points in the Pacific Northwest, carrying complete service of sleeping cars, dining cars and regular day coaches. The train leaving St. Paul in the morning runs via the recently completed Air-Line of the Northern Pacific through Butte, Mont., making this the shortest line to the latter point by 120 miles.

Colonists for Washington, Oregon and British Columbia should take no other line than the Northern Pacific, as by this line only can all portions of the State of Washington be seen, stop-overs are allowed on second-class tickets at Spokane Falls and all points west enabling settlers to inspect the country without extra expense.

For Maps, Time Tables, and Illustrated Pamphlets, or any special information desired, address your nearest ticket agent, or CHAS. S. FEE, Gen'l Pass. and Ticket Agent, St. Paul, Minn.

REGENT MILLING PATENTS.

The following is a list of patents relating to Milling and Grain-handling appliances granted during the month of September, as specially reported for the U. S. MILLER, by Chas. E. Brock, Patent Attorney, Pacific Building, Washington, D. C.:

- No. 435,467, Bran-packer, E. M. Thompson, Indianapolis Ind.
- No. 435,474, Bag-holder, A. Young, East Randolph, N. Y.
- No. 435,542, Separating grain, J. M. King, Rochester, Minn. The process of separating oats from barley or wheat, which consists in passing the grain through tubular screens in which it is held to a considerable depth, rotating said screens, and thereby causing the grain next to the inner surface of the screen to be carried up to the top of the body of grain in the screen and then slid down over the inclined surface of the body of grain in the screen, and to be brought endwise against the surface of the screen.
- No. 435,602, Exhaust-fan, A. M. Doane, Chicago, Ill.
- No. 435,636, Cotton-seed huller, S.S. Williams, Meridian, Miss.
- No. 435,638, Sack-filler, C. E. Barnes, Reed City, Mich., assignor to one-half to D. C. Williams and C. T. Kerry, same place.
- No. 435,854, Decorticating-machine, J. L. Notley, Santa Cruz, Cal.
- No. 435,968, Grain spout, S.B. Heart, Peoria, Ill.
- No. 436,036, Elevator, A. Hogeland, Lincoln, Neb.
- No. 436,161, Barrel-closure, H. C. Strout, Peabody, Mass.
- No. 436,294, Roller-grinding-mill, W. D. Gray, Milwaukee, Wis., assignor to E. P. Allis Co., same place.
- No. 436,247, Bolting-reel, W. D. Leonhardt, St. Louis, Mo.
- No. 436,348, H. M. Fulwider, Redmon, Ill., assignor to one-fourth to J. McVay, Barton, Ill.
- No. 436,581, Device for operating the shaking-shoes of grain scouers &c., W. W. Huntley, Silver Creek, N. Y., assignor by mesne assignments to Huntley, Cranson & Hammond, same place.
- No. 436,585, Grain-registering and loading attachment, A. J. Miller, Oneida, Ill.
- No. 436,615, Adjustable assorting-screen, A. Stehle, Cannstadt, Germany. This patent covers the combination of a fixed screen-frame having screen-wires and movable screen frames with means for moving a portion of the movable screen-frames upward and another portion downward, substantially as and for the purpose set forth.
- No. 436,854, Automatic grain-weighing-scales, J. H. Gunder, W. H. Pierce, Tolono, Ill.
- No. 437,087, Grinding-mill, W. Buchholz, Cleveland, O.
- No. 437,093, Grain-measuring device, M. Cashin, New York, N. Y.
- No. 437,144, Grinding-mill, H. H. Coles, Philadelphia, Pa., assignor to the Coles Manufacturing Company of Pennsylvania.
- No. 437,506, Endless conveyor, J. H. Otten, Milwaukee, Wis.
- No. 437,640, Grinding-machine, G. W. Brown, Portland, Me., assignor to the Belknap Motor Co., same place.
- No. 437,699, Millstone, Louis H. Letz, Crown Point, Ind.
- No. 437,756, Grinding-mill, David R. Green and Frank R. Fisher, Waterloo, Iowa.
- No. 437,825, Water-wheel controlling device, Horace B. Utter, Rockford, Ill.
- No. 437,891, Grain-cleaner attachment, John Grider, LaGrange, Cal.
- No. 437,912, Flour and Middlings Separator, Chas. F. Shumaker, Silver Creek, N. Y.

EVERYBODY'S PAINT BOOK.

A new work on INDOOR and OUTDOOR painting which is designed to teach people how to DO THEIR OWN PAINTING and save the expense of a professional painter. The most practical and valuable work of the kind ever issued. Full directions are given for mixing paints for all purposes, KALOMIN, PAPER HANGING, VARNISHING, STAINING, POLISHING, as well as how to REPAIR, FURNITURE, so that it will look as good as new. Tells all about HOUSE-CLEANING with paint and kerosene. Full directions are given for making the beautiful SPATTER-WORK pictures in which the ladies are so much interested. Tells how to paint OUT-BUILDINGS, ROOFS, FARM WAGONS, FARM IMPLEMENTS and CARRIAGES as well as how to paint a PIANO or ORGAN or make paint for BLACKBOARDS, GRADING in each and black wash, painting in imitation of BRONZE, MARBLE, GILDING, BRONZING and SILVERING. Beautifully printed and bound. It will SAVE ITS COST in a short time. See by mail on receipt of price. One Dollar.

Address, UNITED STATES MILLER, Milwaukee, Wis.

Choice of 3 Trains

— VIA —

MONON ROUTE

— BETWEEN —

CHICAGO and
INDIANAPOLIS,
CINCINNATI,
LOUISVILLE,
LEXINGTON.

Unsurpassed Pullman Car Service.

Fast Trains. Sure Connections.

Short Route to Florida.

Be sure your tickets read via Monon Route (L. N. A. & C. R'y.) and your comfort is guaranteed.

For Maps, Guides, etc., address

JAMES BARKER, Gen'l Pass'r Agent, CHICAGO.

Adams Express Building.

— THE —

Cleveland, Cincinnati, Chicago & St. Louis
RAILWAY.

BIG FOUR ROUTE

— BETWEEN —

CHICAGO
INDIANAPOLIS
and CINCINNATI.

The Only Line running the Popular Buffet
Sleeping Cars between

CHICAGO and CINCINNATI

The Only Line from Chicago running Solid
Vestibule Trains into Central Union Depot,
Cincinnati, where connection is made with
Through Car Lines for Florida, avoiding all
disagreeable transfers.

Through Tickets via the Big Four Route can
be procured at all Ticket Offices in the Northwest.

O. C. MURRAY, Traffic Manager. D. B. MARTIN, Gen'l Pass'r Agent.
CINCINNATI, O.

Grand Haven Route

D., G. H. & M. R. Y.

THE SHORT LINE TO POINTS IN

Michigan, Canada and the East

AND THE FAVORITE TOURIST ROUTE TO

Niagara Falls, Thousand Islands, Rapids of the St.
Lawrence, Mountain and Seashore Resorts.

Steamers leave Milwaukee daily, except Saturdays,
at 8.00 P. M., and connect the following morning
with the daylight limited, which reaches Niagara
Falls at 7.40 P. M., Toronto 7.30 P. M., Mon-
tréal 7.30 A. M., New York 9.40 A. M., Boston
11.40 A. M.

PARLOR AND BUFFET CARS

GRAND HAVEN to NIAGARA FALLS

SLEEPING CARS TO

NEW YORK and BOSTON

The only daily line to Muskegon, and the
quickest route to the Saginaws and Bay City.

JOHN W. LOUD, Traffic Manager. B. C. MEDDAUGE, Western Pass'r Agent.
DETROIT. 99 Wisconsin St., MILWAUKEE.

SCIENTIFIC AMERICAN

ESTABLISHED 1845

Is the oldest and most popular scientific and
mechanical paper published and has the largest
circulation of any paper of its class in the world.
Fully illustrated. Best class of Wood Engrav-
ings. Published weekly. Send for specimen
copy. Price \$5 a year. Four months' trial, \$1.
MUNN & CO., Publishers, 361 Broadway, N. Y.

ARCHITECTS & BUILDERS

A great success. Each issue contains colored
lithographic plates of country and city residences
or public buildings. Numerous engravings
and full plans and specifications for the use of
such as contemplate building. Price \$1.50 a year,
25 cts. a copy. MUNN & CO., PUBLISHERS.

PATENTS

may be secured
by applying to
MUNN & CO.,
years' experience and have made over 100,
000 applications for American and Foreign
patents. Send for Handbook. Correspond-
ence strictly confidential.

TRADE MARKS.

In case your mark is not registered in the Pat-
ent Office, apply to MUNN & CO., and procure
immediate protection. Send for Handbook.

COPYRIGHTS for books, charts, maps,
etc., quickly procured. Address
MUNN & CO., Patent Solicitors,
GENERAL OFFICE: 361 BROADWAY, N. Y.



Fast Mail Line with Electric Lighted
and Steam Heated, Vestibuled Trains
between Chicago, Milwaukee, St. Paul
and Minneapolis.

Trans - Continental Route with
Electric Lighted and Steam Heated Ves-
tibuled Trains between Chicago and
Council Bluffs, Omaha or St. Paul and
the Pacific Coast.

Great National Route between Chi-
cago, Kansas City and St. Joseph, Mo.

5700 Miles of Road reaching all prin-
cipal points in Illinois, Wisconsin, Min-
nesota, Iowa, Missouri, South Dakota
and North Dakota.

For Maps, Time Tables, rates of passage and freight,
etc., apply to the nearest station agent of the CHI-
cago, MILWAUKEE & ST. PAUL RAILWAY, or to any
Railroad Agent anywhere in the World.

ROSWELL MILLER, A. V. M. CARPENTER,
General Manager. Gen'l Pass. and Tkt. Agt.

For information in reference to Lands and
Towns owned by the CHICAGO, MILWAUKEE & ST.
PAUL RAILWAY COMPANY, write to H. G. HAUGAN,
Land Commissioner, Milwaukee, Wisconsin.

THE CHICAGO AND NORTH-WESTERN RAILWAY.

Affords unrivaled facilities for transit between the
most important cities and towns in Illinois, Iowa,
Wisconsin, Northern Michigan, Minnesota,
North and South Dakota, Nebraska and Wyom-
ing.

The train service is carefully adjusted to meet the
requirements of through and local travel and includes
Fast Vestibuled Trains

Dining Cars, Sleeping Cars and Day Coaches
Running Solid between Chicago and
ST. PAUL, MINNEAPOLIS, COUNCIL
BLUFFS, OMAHA, DENVER and
PORTLAND, ORE.

Pullman and Wagner Sleepers
CHICAGO to SAN FRANCISCO
WITHOUT CHANGE.

COLONIST SLEEPERS
CHICAGO to PORTLAND, ORE.
and SAN FRANCISCO.

FREE RECLINING CHAIR CARS
CHICAGO TO
DENVER & PORTLAND, ORE.
Via Council Bluffs and Omaha.

For time of trains, tickets and all information, apply to
Station Agents of the Chicago & North-Western Railway, or to
the General Passenger Agent at Chicago.

W. H. NEWMAN, 3d Vice-Pres. J. M. WEITMAN, Gen. Manager. E. P. WILSON, Gen. Pass. Agt.

Milwaukee & Northern R. R.**SHORT LINE**

— TO —

Ontonagon, Marquette, Negaunee, Ish-
peming, Hancock, Houghton, Cham-
pion, Republic, Iron Mountain, Me-
nominee, Mich.

Marquette, Oconto, Green Bay, Depere,
Neenah, Menasha, Appleton, Wis.

THE TABLE OF EXPRESS TRAINS.

STATIONS.	DEPART.	ARRIVE.
Champion, Republic, Iron Mountain,	11:05 P. M. 7:20 A. M. 6:30 A. M.	8:30 A. M. 6:55 P. M. 8:30 A. M.
Menominee, Marquette, Oconto, Green Bay, Depere,	11:05 P. M. 7:20 A. M. 6:30 A. M. 2:30 P. M.	8:30 A. M. 6:55 P. M. 11:20 A. M.
Appleton, Menasha, Neenah	11:05 P. M. 7:20 A. M. 6:30 A. M. 2:30 P. M.	8:30 A. M. 6:55 P. M. 11:20 A. M.

* Daily. † Monday only. ‡ Except Saturday and Sunday. All other trains daily except Sunday.

Pullman Sleeping Cars are run on all night trains,
and are ready for occupancy at 9:00 P. M.

New Passenger Station, Fourth Ward Park.

C. F. DUTTON, General Manager. W. B. SHEARDOWN, Gen'l Pass'r & Tkt. Agt.



— RUN —

Fast Trains with Pullman Vestibuled Drawing
Room Sleepers, Dining Cars and Coaches of latest
design, between Chicago and Milwaukee and St.
Paul and Minneapolis.

Fast Trains with Pullman Vestibuled Drawing
Room Sleepers, Dining Cars and Coaches of latest
design, between Chicago and Milwaukee and Ash-
land and Duluth.

Through Pullman Vestibuled Drawing Room
and Colonist Sleepers via the Northern Pacific
Railroad between Chicago and Portland, Ore.

Convenient Trains to and from Eastern, Western,
Northern and Central Wisconsin points, afford-
ing unequalled service to and from Waukesha,
Fond du Lac, Oshkosh, Neenah, Menasha,
Chippewa Falls, Eau Claire, Hurley, Wis., and
Ironwood and Bessemer, Mich.

For tickets, sleeping car reservations, time tables
and other information, apply to Agents of the line,
or to Ticket Agents anywhere in the United States
or Canada.

S. E. AINSLIE, General Manager, Milwaukee, Wis.
J. M. HANNAPORD, Gen'l Traffic Manager, St. Paul, Minn.
E. C. BARLOW, Traffic Manager, Chicago, Ill.
LOUIS BOKSTEIN, Gen'l Pass'r & Ticket Agt, Chicago, Ill.

ASHLAND MILWAUKEE, LAKE SHORE & WESTERN R. Y.**Through Sleeping & Parlor Car Line****FAST TRAINS****CHICAGO AND MILWAUKEE**

Appleton, Wausau & Ashland
THE GOGEBIC, PENOKIE AND MONTREAL
IRON AND MINERAL RANGES.

Hurley, Ironwood, Bessemer and Wakefield
The Manufacturing Centers and Lumbering Districts
of Central and Northern Wisconsin.

SHEBOYGAN, MANITOWOC, KAUKAUNA,
APPLETON, WAUSAU, ANTIGO, EAGLE
RIVER AND RHINELANDER.

The only line reaching the celebrated fishing resorts
of Northern Wisconsin and Michigan.

Gogebic, Tomahawk and Pelican Lakes,
Rhineland, Eagle Waters, Twin Lakes, Lake
Vieux Deser., Watersmeet.

The ONTONAGON, BRU. E and other Trout Streams,
Noted for their excellent Muskellonge, Bass, Pike
Pickeral and Trout fishing.

DIRECT LINE
Via New London Junc. and G. B. W. & St. P. R. R.

SEYMOUR, GRAND RAPIDS, AND
STEVENS POINT.

Via ASHLAND and NORTHERN PACIFIC R. R.

**SUPERIOR, DULUTH,
PACIFIC COAST AND INTERMEDIATE POINTS.**

Guide Books, Maps, Time Cards and full informa-
tion furnished on application to the Gen'l Pass. Agt.
Chas. L. Ryder, Gen'l Agt. 197 Clark Street,
A. W. Russell, City P. & T. Agt. CHICAGO.

Milwaukee City Office, 95 Wisconsin Street.
H. F. WHITCOMB, General Manager. ERNEST VLIET, Gen. Pass. Agt.
MILWAUKEE, WIS.



94 Miles the Shortest,
8 Hours the Quickest,

CINCINNATI TO NEW ORLEANS

Time, 27 Hours.
Entire Trains, Baggage Car, Day Coaches and Sleepers run
through without change.

110 Miles the Shortest,
7 Hours the Quickest,

CINCINNATI to JACKSONVILLE, Fla.

Time, 28 Hours.
Through Sleepers without change. The Short Line
between Cincinnati and

Lexington, Ky., Time, 3 1/2 Hours.
Knoxville, Tenn., " 12 "
Asheville, N. C., " 17 "
Chattanooga, Tenn., " 11 "
Atlanta, Ga., " 15 "
Birmingham, Ala., " 16 "

Direct Connections at New Orleans, and Shreve-
port, for Texas, Mexico and California.

Trains leave Central Union Depot, Cincinnati,
crossing the Famous High Bridge of Kentucky, and
rounding the base of Lookout Mountain.

Over One Million Acres of Land in Alabama,
the Future Great State of the South, subject to
pre-emption. Unsurpassed Climate.

For Rates, Maps, etc., address,
C. S. HENRY, Traveling Passenger Agent,
193 Clark St., Chicago, Ill.

C. C. HARVEY, CINCINNATI, D. G. EDWARDS,
Vice Pres't. OHIO, G. P. & T. A.

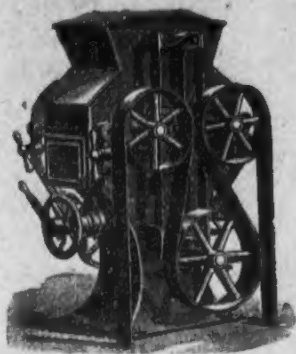
Goodrich Steamers**ON REGULAR TIME****LEAVE MILWAUKEE FOR**

Chicago daily, Saturdays excepted, at 7:00 P. M.
Racine daily, Saturdays excepted, at 7:00 P. M.
Sheboygan daily, Sundays and Mondays ex-
cepted, at 7:00 A. M.

Manitowoc daily, Sundays and Mondays ex-
cepted, at 7:00 A. M.
Sheboygan on Sundays and Mondays at 7:00 P. M.
Manitowoc on Sundays and Mondays at 7:00 P. M.
Kewaunee and Ahnapee Saturdays at 7:00 A. M.

THOMAS FORBES, Passenger Agent. G. HURSON, Sec. and G. T. M.

EXPORTING millers should write to the
Riverside Printing Co., Milwaukee, Wis., for
the best Flour Cable Code ever published.
There are more copies of this Code in use than
of ALL other flour codes published. It is
simple and accurate. It is called "The
Riverside Flour Cable Code."



THE KEYSTONE

4 ROLLER WHEAT MILL.

Flour Mills.

Corn Mills.

Hominy Mills.

ALBIA, IA., July 15, 1890.

The J. B. Allfree Co., Indianapolis, Ind.:

Dear Sirs: We have now been running our mill for about a week, and it is giving us entire satisfaction in every respect.

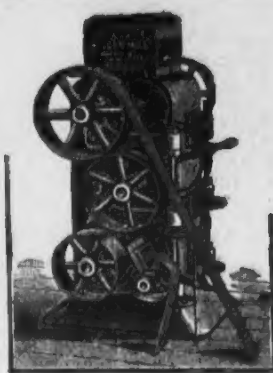
We are doing splendid work, and our flour is ahead of anything that comes to this market, and we have some good mills to compete with; among others, Kelly & Lisle, Leavenworth, Kans.; Blair & Auld, Atchison, Kans.; Louisiana, Mo., Mills, and many others.

Our straight grade is whiter than any patent on this market, and our patent is par excellence. We hereby accept the mill.

Yours truly,
J. A. EDWARDS & SON.

Important Features in our 6 Roller Corn Mill.

- Entire Belt Drive.
- Independent Tightener on Both Belts.
- Absolutely Positive Differential.
- Simultaneous Setting by the Movement of one Lever.
- Automatic Vibratory Feed.
- Perfect Alignment of Fixed Rolls.
- Light Running.
- Absolutely Dust Tight.
- Practical Instantaneous Trimming.
- Rolls Removed with Great Facility.



THE KEYSTONE

6 ROLLER CORN MILL.

Address, THE J. B. ALLFREE CO., 75 to 86 Shelby St., INDIANAPOLIS, IND.

NEW YORK BELTING & PACKING CO.

JOHN H. CHEEVER, Treasurer.

15 PARK ROW, NEW YORK.

Oldest and Largest Manufacturers in the U. S. A. of

Vulcanized Rubber Fabrics for Mechanical Purposes

MILLERS' HOSE A SPECIALTY.

Also a Good STEAM HOSE.

RUBBER MATS,
RUBBER MATTING,
and STAIR TREADS.
RUBBER BELTING, PACKING AND HOSE.



SALESROOMS:

ATLANTA, 16 Decatur St.
BALTIMORE, 12 North Charles St.
BOSTON, 52 Summer St.
BUFFALO, 174-176 Washington St.
CHARLESTON, 160 Meeting St.
CHICAGO, 151 Lake St.
DENVER, 1601-1611 17th St.
DETROIT, 16-24 Woodward Ave.
GRAND RAPIDS, 4 Monroe St.
KANSAS CITY, 7313 West 12th St.
MINNEAPOLIS, 28 South 2d St.
NEW ORLEANS, 8-12 N. Peters St.
PHILADELPHIA, 308 Chestnut St.
ST. LOUIS, 616 Locust St.
European Branch, HAMBURG, GER., Pickhuben 5, (Freihafengebiet).

NOW READY.

Experimental Science

By GEO. M. HOPKINS.

740 Pages, 680 Illustrations.

PRICE, by mail, postpaid, - \$4.00

Address:

UNITED STATES MILLER and MILLING ENGINEER
MILWAUKEE, WIS.

The INK used on this paper is from
the factory of

CHAS. ENU JOHNSON & CO.,
PHILADELPHIA, PA.

Western Branch House: 40 La Salle St., CHICAGO

The Chronos Automatic Grain Scale

TO THE TRADE.

A short time ago we introduced to American millers and the grain trade, the "Chronos" Automatic Grain Scale, familiar to and used by all prominent millers and grain handlers in Europe, but practically unknown in this country.

The demand and inquiries for the "Chronos" has exceeded our most sanguine expectations, and to keep pace with our rapidly increasing trade, we shall abandon our present method of importing the scales from our European factory, and are now negotiating to manufacture same on a large scale in this country under our United States patents Nos. 261,257, 262,226, 323,583, 339,002, 376,965 and 414,080. The scales will be manufactured in fifteen sizes, having a capacity from 30 to 10,000 bushels per hour, and will therefore be suitable for the custom and merchant mill, or large or small elevators.

The "Chronos" may be employed very profitably in any flour mill or elevator, as it effects great saving in manual labor, time, and avoids errors in weighing. It occupies but a comparatively small space, and will weigh the grain as fast as spouted, at the same time registering the amount of grain that is passing through.

Our automatic scale is the only one that can be used as an even balance scale, to weigh grain to or from the car or vessel, to weigh the grain as it leaves the Separator and indicate the shrinkage after foreign substances are removed, also to weigh to or from bins, and when used to precede the first break, will show at a glance the amount of wheat ground. It can be tested without the aid of another scale, as the patented balancing mechanism allows the scale to be balanced full or empty at any time. Another exclusive and excellent feature is the mechanism for allowing foreign material in the grain to pass through without interrupting the working, which permits the scale to work reliably on uncleaned wheat.

Handsomely illustrated catalogues, prices, etc., furnished on application.

C. REUTHER & REISERT,
74 Cortlandt Street, - NEW YORK.

THE EUREKA TURBINE.

The Best Port-Gate Wheel Ever Built.

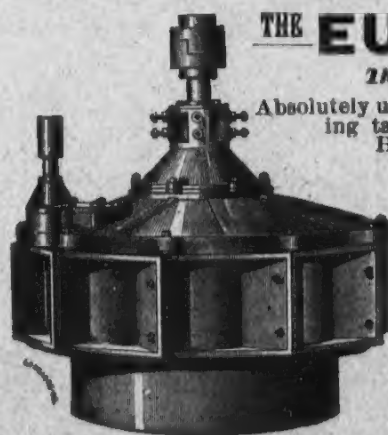
Absolutely unequalled in efficiency, is shown by the accompanying table from the records of actual tests at the HOLYOKE, MASS., TESTING FLUME.

	Full Gate.	3/4 Water.	1/2 Water.	1/4 Water.
24" Wheel.....	8436	8416	8300	8000
34" Wheel.....	8800	8710	8700	8003
34" Wheel.....	8078	7578	7575	6790
34" Wheel.....	8000	8012	7814	6850

No other turbine ever approached the above figures at part-gate. We publish our part-gate figures. Others significantly omit them.

For Catalogue and information, address

The Allentown Foundry & Machine Co.,
ALLENTOWN, PA., U. S. A.



THE JOHN H. MCGOWAN CO.



BRANCH HOUSE, 1425 EAST MAIN ST., RICHMOND, VA.

"TRIUMPH" CORN SHELLER

CAPACITY

2000 BUSHELS PER DAY.

Shells wet or dry corn.

CHEAPEST AND BEST SHELLER.

PAIGE MFG. CO.

No. 14 Fourth St., PAINESVILLE, O.



CHAS. A. PRAHL

MANUFACTURER OF

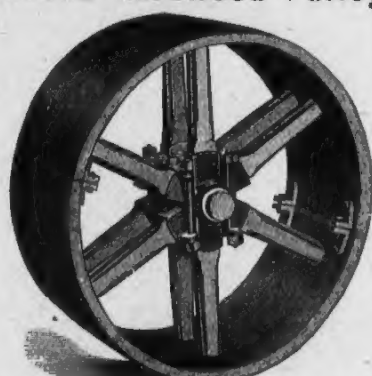
Artificial Limbs and Apparatus

Elevated Feet for Shortened Limbs, Braces for Weak Ankles and Spinal Curvatures, Elastic Stockings and Trusses.

300 Grand Avenue, MILWAUKEE, WIS.



Menasha Hardwood Pulleys.



We are sole makers of hardwood bent rim, oak spoke arm, iron hub pulleys; gripped to shaft with bolts and using patent paper bushings. They can be put on shaft without taking it down or cutting key seats. No glue or nails used in their construction.

Also sole makers of only small split pulley 1 inch to 8 inches in diameter in the market. They are light, handsome and reliable. Best machine pulley made, and can be taken off or put on in five minutes. See above cut of them. No glue or nails in them. No key seats to cut. Also makers of only Hickory Hangers in the market. They have an iron box and are adjustable, same as an Iron Hanger. Send for circulars and discounts.

MENASHA SPLIT PULLEY WORKS,
MENASHA, WIS.

THE IMPROVED WALSH Double Turbine Water Wheel

Patent Cylinder Gate.
Easy working.
Positively no leakage.
Shipped on
30 days' trial.



More power with
less water than
any other wheel
in the world.

MANUFACTURED BY

B. H. & J. SANFORD
SHEBOYGAN FALLS, WIS.

For special figures mention this paper.

O. C. RITTER,
Sta. A, SPRINGFIELD, MO.

Patentee and Designer

Ritter's One Reduction Milling System.

FULL ROLLER PLANTS FOR SMALL MILLS.

Perforated Metals



For Milling and Grain Cleaning Machinery.

Patents for Inventors.

CHAS. E. BROCK,

Solicitor of Patents,

Pacific Building, WASHINGTON, D. C.

All matters relating to patents promptly and carefully attended to. Caveats filed. Trademarks registered, and Designs patented. Write for particulars. Correspondence in English or German.

NO TROUBLE TO BUILD

If you start right. The first step should be an examination of Mr.

Shoppell's building designs—the only large collection of designs that are artistic, practical and reliable. The estimates are guaranteed. Mr. Shoppell's publications are as follows:

Follows:			Price.
Portfolio of \$1,000 Houses, 30 designs,			\$2 00
16	16	1,500	30
17	17	2,000	30
18	18	2,500	30
19	19	3,000	30
20	20	3,500	30
21	21	4,000	30
22	22	4,500	30
23	23	5,000	30
24	24	5,500	30
25	25	6,000	30
26	26	6,500	30
27	27	7,000	30
28	28	7,500	30
29	29	8,000	30
30	30	8,500	30
31	31	9,000	30
32	32	9,500	30
33	33	10,000	30
34	34	10,500	30
35	35	11,000	30
36	36	11,500	30
37	37	12,000	30
38	38	12,500	30
39	39	13,000	30
40	40	13,500	30
41	41	14,000	30
42	42	14,500	30
43	43	15,000	30
44	44	15,500	30
45	45	16,000	30
46	46	16,500	30
47	47	17,000	30
48	48	17,500	30
49	49	18,000	30
50	50	18,500	30
51	51	19,000	30
52	52	19,500	30
53	53	20,000	30
54	54	20,500	30
55	55	21,000	30
56	56	21,500	30
57	57	22,000	30
58	58	22,500	30
59	59	23,000	30
60	60	23,500	30
61	61	24,000	30
62	62	24,500	30
63	63	25,000	30
64	64	25,500	30
65	65	26,000	30
66	66	26,500	30
67	67	27,000	30
68	68	27,500	30
69	69	28,000	30
70	70	28,500	30
71	71	29,000	30
72	72	29,500	30
73	73	30,000	30
74	74	30,500	30
75	75	31,000	30
76	76	31,500	30
77	77	32,000	30
78	78	32,500	30
79	79	33,000	30
80	80	33,500	30
81	81	34,000	30
82	82	34,500	30
83	83	35,000	30
84	84	35,500	30
85	85	36,000	30
86	86	36,500	30
87	87	37,000	30
88	88	37,500	30
89	89	38,000	30
90	90	38,500	30
91	91	39,000	30
92	92	39,500	30
93	93	40,000	30
94	94	40,500	30
95	95	41,000	30
96	96	41,500	30
97	97	42,000	30
98	98	42,500	30
99	99	43,000	30
100	100	43,500	30
101	101	44,000	30
102	102	44,500	30
103	103	45,000	30
104	104	45,500	30
105	105	46,000	30
106	106	46,500	30
107	107	47,000	30
108	108	47,500	30
109	109	48,000	30
110	110	48,500	30
111	111	49,000	30
112	112	49,500	30
113	113	50,000	30
114	114	50,500	30
115	115	51,000	30
116	116	51,500	30
117	117	52,000	30
118	118	52,500	30
119	119	53,000	30
120	120	53,500	30
121	121	54,000	30
122	122	54,500	30
123	123	55,000	30
124	124	55,500	30
125	125	56,000	30
126	126	56,500	30
127	127	57,000	30
128	128	57,500	30
129	129	58,000	30
130	130	58,500	30
131	131	59,000	30
132	132	59,500	30
133	133	60,000	30
134	134	60,500	30
135	135	61,000	30
136	136	61,500	30
137	137	62,000	30
138	138	62,500	30
139	139	63,000	30
140	140	63,500	30
141	141	64,000	30
142	142	64,500	30
143	143	65,000	30
144	144	65,500	30
145	145	66,000	30
146	146	66,500	30
147	147	67,000	30
148	148	67,500	30
149	149	68,000	30
150	150	68,500	30
151	151	69,000	30
152	152	69,500	30
153	153	70,000	30
154	154	70,500	30
155	155	71,000	30
156	156	71,500	30
157	157	72,000	30
158	158	72,500	30
159	159	73,000	30
160	160	73,500	30
161	161	74,000	30
162	162	74,500	30
163	163	75,000	30
164	164	75,500	30
165	165	76,000	30
166	166	76,500	30
167	167	77,000	30
168	168	77,500	30
169	169	78,000	30
170	170	78,500	30
171	171	79,000	30
172	172	79,500	30
173	173	80,000	30
174	174	80,500	30
175	175	81,000	30
176	176	81,500	30
177	177	82,000	30
178	178	82,500	30
179	179	83,000	30
180	180	83,500	30
181	181	84,000	30
182	182	84,500	30
183	183	85,000	30
184	184	85,500	30
185	185	86,000	30
186	186	86,500	30
187	187	87,000	30
188	188	87,500	30
189	189	88,000	30
190	190	88,500	30
191	191	89,000	30
192	192	89,500	30
193	193	90,000	30
194	194	90,500	30
195	195	91,000	30
196	196	91,500	30
197	197	92,000	30
198	198	92,500	30
199	199	93,000	30
200	200	93,500	30
201	201	94,000	30
202	202	94,500	30
203	203	95,000	30
204	204	95,500	30
205	205	96,000	30
206	206	96,500	30
207	207	97,000	30
208	208	97,500	30
209	209	98,000	30
210	210	98,500	30
211	211	99,000	30
212	212	99,500	30
213	213	100,000	30
214	214	100,500	30
215	215	101,000	30
216	216	101,500	30
217	217	102,000	30
218	218	102,500	30
219	219	103,000	30
220	220	103,500	30
221	221	104,000	30
222	222	104,500	30
223	223	105,000	30
224	224	105,500	30
225	225	106,000	30
226	226	106,500	30
227	227	107,000	30
228	228	107,500	30
229	229	108,000	30
230	230	108,500	30
231	231	109,000	30
232	232	109,500	30
233	233	110,000	30
234	234	110,500	30
235	235	111,000	30
236	236	111,500	30
237	237	112,000	30
238	238	112,500	30
239	239	113,000	30
240	240	113,500	30
241	241	114,000	30
242	242	114,500	30
243	243	115,000	30
244	244	115,500	30
245	245	116,000	30
246	246	116,500	30
247	247	117,000	30
248	248	117,500	30
249	249	118,000	30
250	250	118,500	30
251	251	119,000	30
252	252	119,500	30
253	253	120,000	30
254	254	120,500	30
255	255	121,000	30
256	256	121,500	30
257	257	122,000	30
258	258	122,500	30
259	259	123,000	30
260	260	123,500	30
261	261	124,000	30
262	262	124,500	30
263	263	125,000	30
264	264	125,500	30
265	265	126,000	30
266	266	126,500	30
267	267	127,000	30
268	268	127,500	30
269	269	128,000	30
270	270	128,500	30
271	271	129,000	30
272	272	129,500	30
273	273	130,000	30
274	274	130,500	30
275	275	131,000	30
276	276	131,500	30
277	277	132,000	30
278	278	132,500	30
279	279	133,000	30
280	280	133,500	30
281	281	134,000	30
282	282	134,500	30
283	283	135,000	30
284	284	135,500	30
285	285	136,000	30
286	286	136,500	30
287	287	137,000	30
288	288	137,500	30
289	289	138,000	30
290	290	138,500	30
291	291	139,000	30
292	292	139,500	30
293	293	140,000	30
294	294	140,500	30
295	295	141,000	30
296	296	141,500	30
297	297	142,000	30
298	298	142,500	30
299	299	143,000	30
300	300	143,500	30
301	301	144,000	30
302	302	144,500	30
303	303	145,000	30
304	304	145,500	30
305	305	146,000	30
306	306	146,500	30
307	307	147,000	30
308	308	147,500	30
309	309	148,000	30
310	310	148,500	30
311	311	149,000	30
312	312	149,500	30
313	313	150,000	30
314	314	150,500	30
315	315	151,000	30
316	316	151,500	30
317	317	152,000	30
318	318	152,500	30
319	319	153,000	30
320	320	153,500	30
321	321	154,000	30
322	322	154,500	30
323	323	155,000	30
324	324	155,500	30
325	325	156,000	30
326	326	156,500	30
327	327	157,000	30
328	328	157,500	30
329	329	158,000	30
330	330	158,500	30
331	331	159,000	30
332	332	159,500	30
333	333	160,000	30
334	334	160,500	30
335	335	161,000	30
336	336	161,500	30
337	337	162,000	30
338	338	162,500	30
339	339	163,000	30
340	340	163,500	30
341	341	164,000	30

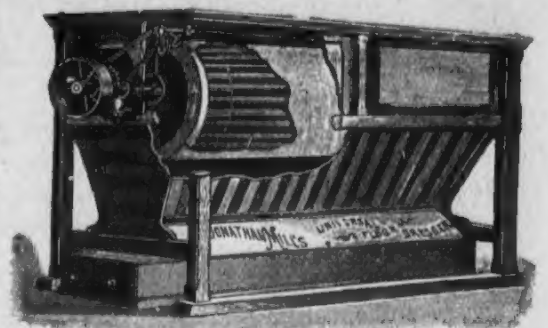
MILLERS

+ + + + OF THE UNITED STATES AND CANADA.

Write us for our new pamphlet and revised price list of our Jonathan Mills UNIVERSAL FLOUR DRESSER. The best machine on the market. Giving satisfaction everywhere in the best mills in the country. Thousands in use. We carry a full line of Crown Silk Anchor Bolting Cloths and Grit Gauzes.

THE JONATHAN MILLS MFG. CO.

+ COLUMBUS, OHIO, U. S. A. +



WE SOLICIT YOUR TRADE.

G. M. MANN.

F. P. MANN.

Milwaukee Bag Company,

— MANUFACTURERS OF —

COTTON PAPER AND JUTE

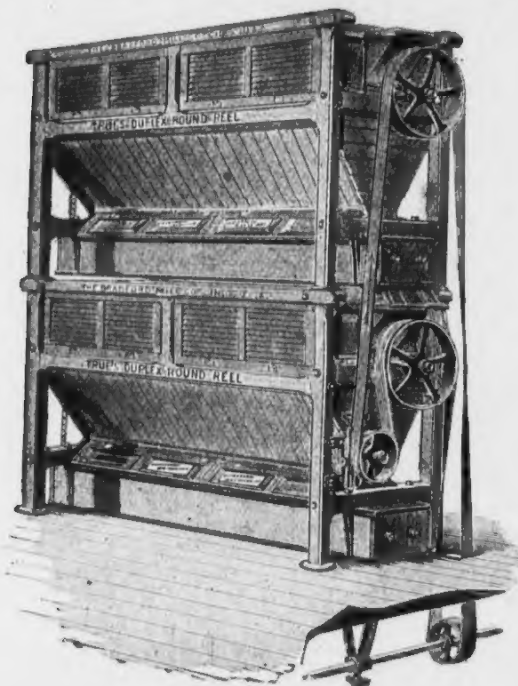
FLOUR SACKS

— DEALERS IN —

Grain Bags, Twines, Centals, etc.

TELEPHONE No. 427.

236 East Water St. MILWAUKEE, WIS.

**FARREL FOUNDRY & MACHINE COMPANY**

ANTONIA, CONN.

Sole Manufacturers of the Celebrated

**ANSONIA ROLLS
FOR USE IN ROLLER MILLS.**

The general experience of American Millers unites in pronouncing these rolls the very best for Flouring Mill use.

These Rolls are now used in all Leading Flouring Mills

Chilled Rolls for Paper Mills a Specialty.

Mention this paper when you write to us.

**THE BRADFORD MILL CO.
CINCINNATI, O.****Mill Builders and Mill Furnishers.**

Dunlap Bolt.

MANUFACTURERS OF THE CELEBRATED

True's Duplex Elevating Scalpers.

True's Duplex Elevating Flour Dressers.

Deobold's Scourer and Polisher.

Contractors for Complete Roller Mills on the Short, Medium or Long System

ROLLS RE-GROUND AND RE-CORRUGATED.

WRITE FOR CATALOGUE AND ESTIMATES.

HUGHES BROS. STEAM PUMP CO.

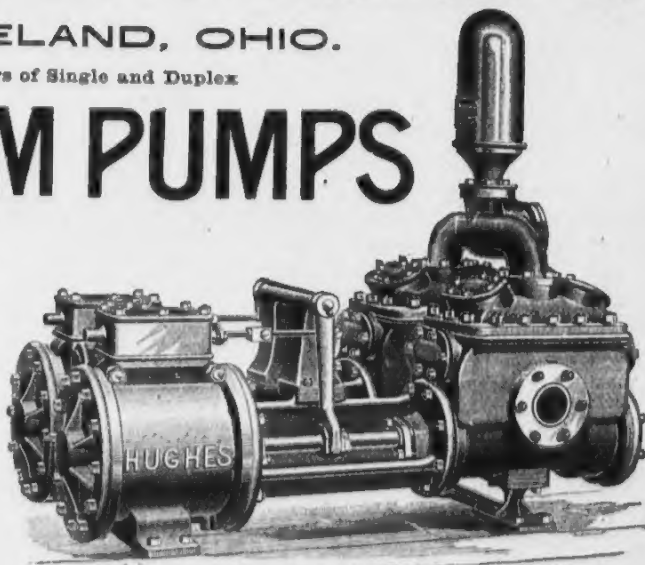
CLEVELAND, OHIO.

Builders of Single and Duplex

STEAM PUMPS

Of Every Description
for all kinds of
Work.

Satisfaction Guaranteed



HUGHES IMPROVED DUPLEX FIRE PUMP.

Send for

1890 Catalogue.

ESTABLISHED 1846.

**J. B. A. KERN & SON,
Merchant Millers,**

Capacity 2,000 Barrels Per Day.

MILWAUKEE, WIS.

Manufacturers of Choice Minnesota and Dakota Hard Wheat Flour.

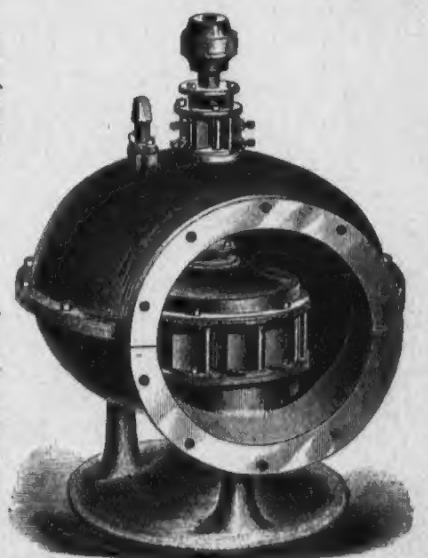
— RYE + FLOUR —

By most approved roller process, guaranteed the best and purest rye flour manufactured.

WE INVITE CORRESPONDENCE FROM CASH BUYERS.

BURNHAM'S NEW IMPROVED
STANDARD TURBINE WHEEL
CATALOGUE FREE.

BURNHAM BROS., . . . YORK, PA.

**ROPP'S + CALCULATOR.**

[Revised Edition for 1890].



This book with its numerous tables, short cuts in figures, etc., is simply invaluable to Millers, Grain-dealers, Farmers and Business men generally. Prices, post-paid, as follows: No. 1. Bound in waterproof leatherette, 50 cents. No. 2. Fine artificial leather, with pocket, silicate slate and account book, 75 cents. No. 3. American Russia or Morocco, with pocket, slate and renewable account book, \$1.00. Address,

E. HARRISON COWKER,

Publisher United States Miller, Milwaukee, Wis.

**DO YOU INTEND TO BUILD?
PRACTICAL LOW-COST HOUSES.
HOW TO BUILD THEM.**

A Large Atlas, containing drawings and floor plans of 40 Modern Houses with Current Estimates of cost of building. All kinds of buildings ranging from a \$400 cottage to a \$10,000 residence. The latest, most complete, and only practical book published. It is false economy to attempt to build without these plans. Price 50 cents, post-paid, 55 cents. Stamps taken.

ADDRESS,

United States Miller and Milling Engineer,
MILWAUKEE, WIS.